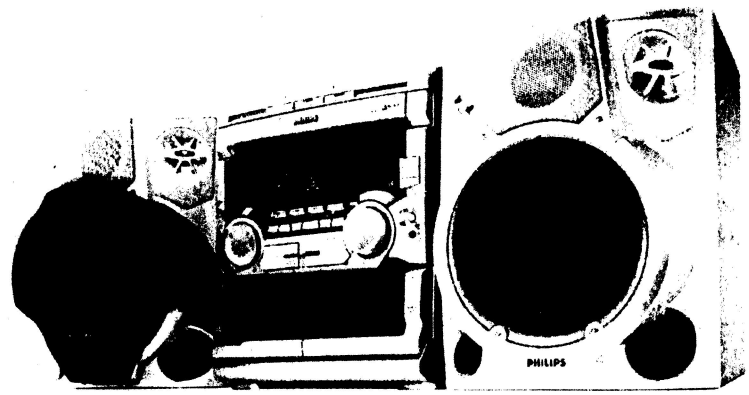
Mini System

FW590C/34

Service
Service
Service



Service Manual

ReWritable CD COMPATIBLE

COMPACT disc DIGITAL AUDIO

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CLASS 1
LASER PRODUCT

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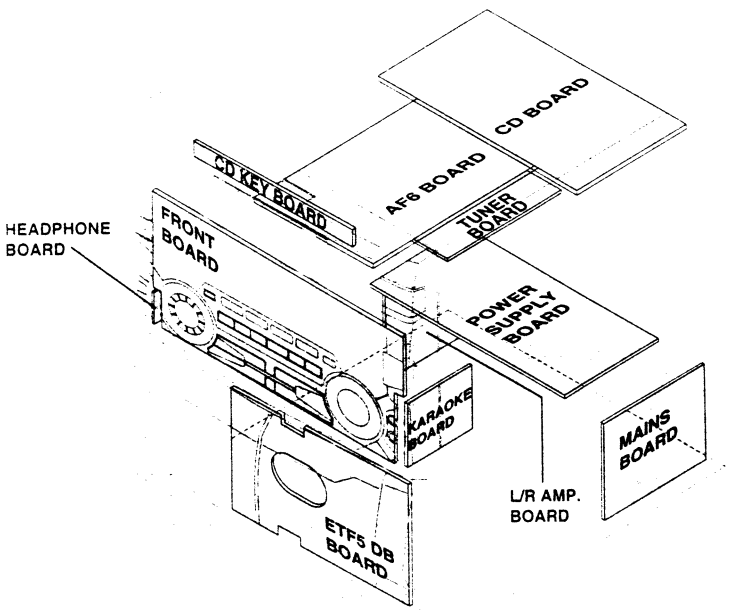
PHILIPS

LOCATION OF PRINTED CIRCUIT BOARDS



VERSION VARIATIONS:

Type /Versions: / Features & Board in used:	FW590C							
	/34							
Aux In	x							
Line Out	x							
Surround Out								
Subwoofer Out	x							
Digital Out	x							
Matrix Surround								
Dolby B	x							
RDS	x							
News	x							
Incredible Surround	x							
Karaoke Features	x							
Voltage Selector								
Low Power Standby / LED	x							
Tuner board - ECO5 Sys	x							
Tuner board - Tuner 95								
Surround Loudspeakers								

SPECIFICATIONS

GENERAL:

Mains voltage : 100V for /26
110-127V 220-240V Switchable for /21/21M
120V for /37
220V for /33
220-230V for /22/34
230V for /25
230-240V for /30

Mains frequency : 50/60Hz
Power consumption : < 20W at Standby
< 150W at 1/8 rated power out
Clock accuracy : < 4 seconds per day
Dimension centre unit : 265 x 310 x 390mm

TUNER:

FM

Tuning range : 87.5-108MHz
65.81-74MHz for /34
Grid : 50kHz (& 30kHz for /34)
IF frequency : 10.7MHz ± 25kHz
Aerial input : 75ohm coaxial
300ohm click fit for /37
Sensitivity at 26dB S/N : < 7µV
Selectivity at 600kHz bandwidth : > 50dB
Image rejection : > 25dB [> 75dB]
Distortion at RF=1mV, dev. 75kHz : < 3% [< 2%]
-3dB Limiting point : < 7µV
Crosstalk at RF=1mV, dev. 40kHz : > 18dB [> 26dB]

MW

Tuning range : 531-1602kHz
530-1700kHz for /21/21M/37
Grid : 9kHz
10kHz for /21/21M/37
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : < 4.0mV/M
Selectivity at 18kHz bandwidth : > 18dB
IF rejection : > 45dB
Image rejection : > 28dB
Distortion at RF=50mV, m=80% : < 5% [< 7%]

LW

Tuning range : 153-279kHz
Grid : 3kHz
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : [< 7.0mV/M]
Selectivity at 18kHz bandwidth : [> 24dB]
IF rejection : [> 26dB]
Image rejection : [> 35dB]
Distortion at RF=50mV, m=80% : [< 7%]

AMPLIFIER:

Output power (6ohm, 1kHz, 10% THD)
L & R : 2 x 100W

Frequency response within -3dB : 40Hz-16kHz
Dynamic Bass Boost : BEAT, PUNCH, BLAST, DBB OFF 1)
Incredible Surround : IS ON , IS OFF 1)
Digital Sound Control :
Optimal, Classic, Techno, Jazz, Rock, Vocal 1)

Headphone output at 32 ohm : 15mW ± 2dB

Input sensitivity
Aux in : 500mV ± 2dB at 1 kohm
Microphone : 2.5mV ± 2dB at 600 ohm
Output sensitivity
Line out : 500mV ± 2dB at 22 kohm
Subwoofer out (max. vol.) : 1.5V ± 2dB at 22 kohm

CASSETTE RECORDER:

Number of track : 2 x 2 stereo
Tape speed : 4.76 cm/sec -0.8/+1.8%
1.6 x 4.76 cm/sec
Wow and flutter : < 0.35% (IEC)
Fast-wind/Rewind time C60 : 130 sec
Bias system : 75kHz ± 10kHz
Rec/Pb freq. response within 4dB (IEC I) : 250Hz - 12.5kHz
Rec/Pb freq. response within 4dB (IEC II): 80Hz - 12.5kHz
Signal to noise ratio (IEC I) : > 44dB
Signal to noise ratio (IEC II) : > 47dB

COMPACT DISC:

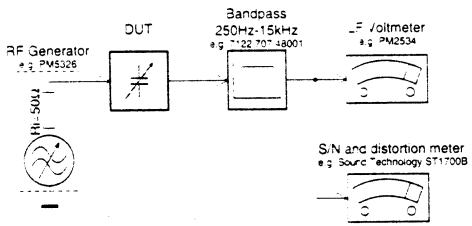
Measurement done at output conn. of the CDC module.
Frequency response within ± 1.5dB : 20Hz - 20kHz
Output level (in Vrms) : 550mV ± 1dB unloaded
Signal/Noise ratio (A-weighted) : > 80dBA
Distortion at 1kHz : < 0.5%
Channel difference at 1kHz : < 1dB
Channel crosstalk at 1kHz : > 60dB
De-emphasis : 0 or 15/50 mS (Switched by subcode on the disc)

[....] Values indicated are for "Tuner 95 Board" only

1) Frequency response in each setting is software controlled.

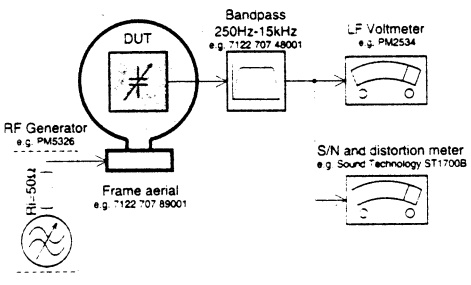
MEASUREMENT SETUP

Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

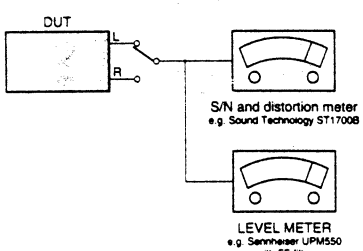
Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday's cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

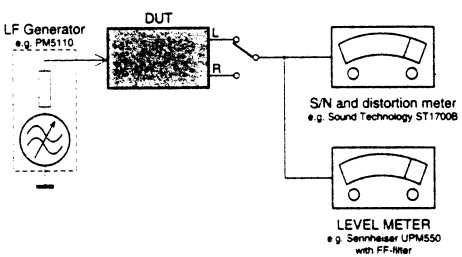
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)



Recorder

Use Universal Test Cassette CrO2 SBC419 4822 397 30069
or Universal Test Cassette Fe SBC420 4822 397 30071



SERVICE AIDS

Service Tools:

Universal Torx driver holder	4822 395 91019
Torx bit T10 150mm	4822 395 50456
Torx driver set T6 - T20	4822 395 50145
Torx driver T10 extended	4822 395 50423

Cassette:

SBC419 Test cassette CrO2	4822 397 30069
SBC420 Test cassette Fe	4822 397 30071
MTT150 Dolby level 200nWb/M	4822 397 30271

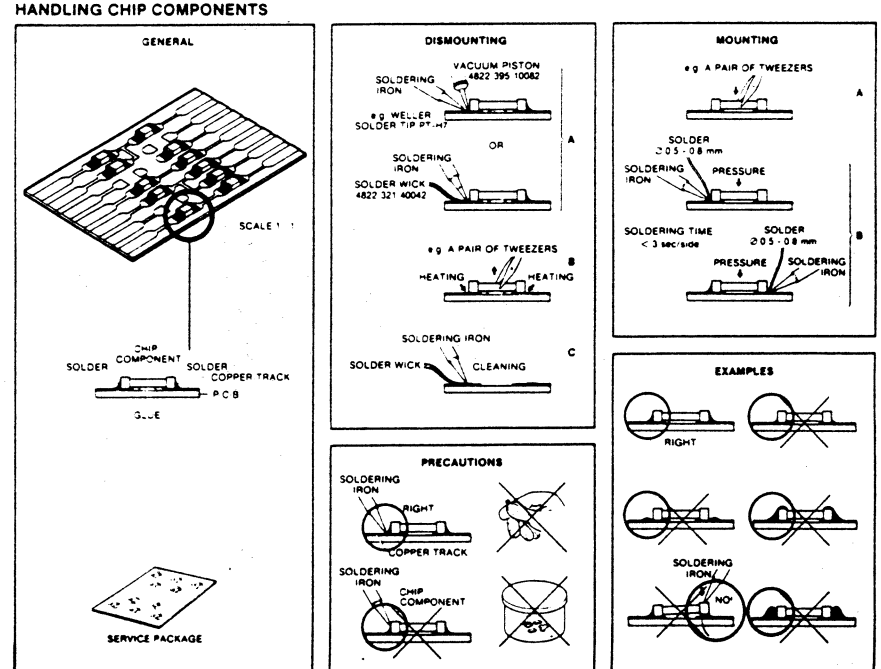
Compact Disc:

SBC426/426A Test disc 3 - 3A	4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz	4822 397 30155
SBC429 Audio Signals disc	4822 397 30184
Dolby Pro-logic Test Disc	4822 395 10216

ESD Equipment:

Anti-static table mat - large 1200x650x1.25mm	4822 466 10953
Anti-static table mat - small 600x650x1.25mm	4822 466 10958
Anti-static wristband	4822 395 10223
Connector box (1MΩ)	4822 320 11307
Extension cable (to connect wristband to conn. box)	4822 320 11305
Connecting cable (to connect table mat to conn. box)	4822 320 11306
Earth cable (to connect product to mat or box)	4822 320 11308
Complete kit ESD3 (combining all above products)	4822 320 10671
Wristband tester	4822 344 13999

HANDLING CHIP COMPONENTS



27 012C12

ESD

(GB) WARNING

ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longevité pourrait être considérablement accourcee par le fait qu'aucune precaution n'est prise à leur manipulation.
Lors de reparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de securité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

(F)
Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les piéces de rechange identiques à celles spécifiées.

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

(I)
Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

"Pour votre securité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

CLASS 1 LASER PRODUCT

(GB) Warning !
Invisible laser radiation when open.
Avoid direct exposure to beam.

(S) Varning !
Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(SF) Varoitus !
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

(DK) Advarse !
Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

GENERAL INFORMATION

General Information

- ***The typeplate (which contains the serial number) is located at the rear of the system.***
- ***Recording is permissible if copyright or other rights of third parties are not infringed.***

Environmental Information

All unnecessary packaging has been omitted. We have tried to make the packaging easy to separate into three materials: cardboard (box), polystyrene foam (buffer) and polyethylene (bags, protective foam sheet).

Your system consists of materials which can be recycled and reused if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.

Acknowledgement

DOLBY B NR

Dolby B NR System and the double-D symbol DD are trademarks of Dolby Laboratories Licensing Corporation. Manufactured under license from Dolby Laboratories Licensing Corporation.

Accessories *(Supplied)*

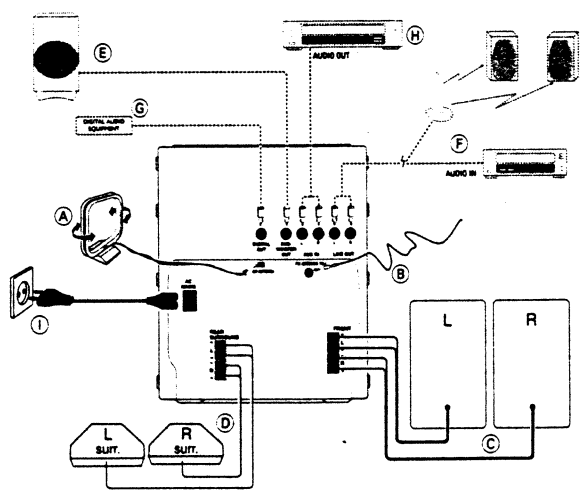
- Remote control
- Batteries (two AA size) for remote control
- AM loop antenna
- FM wire antenna
- AC power cord
- SST surround speakers *(for model FW548C only)*

Safety Information

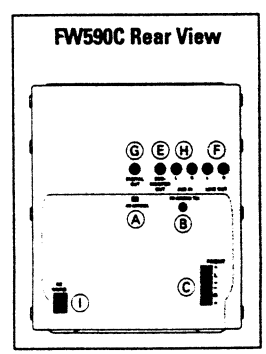
- Before operating the system, check that the operating voltage indicated on the typeplate (or the voltage indication beside the voltage selector) of your system is identical with the voltage of your local power supply. If not, please consult your dealer. The typeplate is located at the rear of your system.
- When the system is switched on, do not move it around.
- Place the system on a solid base (e.g. a cabinet).
- Place the system in a location with adequate ventilation to prevent internal heat build-up in your system.
- The system incorporates a built-in safety feature that prevents over heating.
- Do not expose the system to excessive moisture, rain, sand or heat sources.
- Under no circumstances should you repair the system yourself, as this will invalidate the warranty!
- If the system is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lens of the CD unit inside the system. Should this occur, the CD player will not operate normally. Leave the power on for about one hour with no disc in the system until normal playback is possible.
- Electrostatic discharge may cause unexpected problems. See whether these problems disappear if you unplug the AC power cord and plug it in again after a few seconds.
- **To disconnect the system from the power supply completely, remove the AC power plug from the wall socket.**

Rear Connections

FW545C and FW548C Rear View



FW590C Rear View



A AM Loop Antenna Connection

Connect the supplied loop antenna to the AM ANTENNA terminal. Place the AM loop antenna far away from the system and adjust its position for the best reception.

B FM Wire Antenna Connection

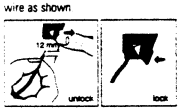
Connect the supplied FM wire antenna to the FM ANTENNA 75 Ω terminal. Adjust the position of the FM antenna for the best reception.

Outdoor Antenna

For better FM stereo reception connect an outdoor FM antenna to the FM ANTENNA 75 Ω terminal using a 75 Ω coaxial wire.

C Speakers Connection

- Connect the right speaker to Front terminal R, with the red wire to + and the black wire to −.
- Connect the left speaker to Front terminal L, with the red wire to + and the black wire to −.
- Clip the stripped portion of the speaker wire as shown.



D Rear Speakers Connection

(for model FW548C only)

Connect the black (non-marked) wires to the black REAR SURROUND terminals and the white (marked) wires to the grey REAR SURROUND terminals.

E Subwoofer Out Connection

Connect the optional active subwoofer to the SUBWOOFER OUT terminal. The subwoofer reproduces just the low bass effect (e.g. explosions, the rumble of spaceships, etc.). Be sure to follow the instructions supplied with the subwoofer.

F Line Out Connection *(wireless ready)*

You can connect the audio left and right LINE OUT terminals to a optional CD Recorder ANALOGUE IN terminals. This allows you to record in an analogue format.

You can also install additional optional front active speakers away from the system (e.g. in another room) to reduce the inconvenience of running long speaker wires across rooms. You can place as many remote speakers as you like provided they operate at the same radio frequency. Connect the wireless radio frequency transmitter to the LINE OUT terminals. Place the active speakers at your preferred location. Be sure to follow the instructions supplied with the active speakers.

Note

- *Availability of a wireless transmitter and its peripherals is subjected to the approval of local authorities. Please check with your local safety or approving authority.*

G Digital Out Connection

You can record the digital sound from the CD, through this output, on any audio equipment with digital input (e.g. CD Recorder, Digital Audio Tape (DAT) deck, Digital to Analog Converter and Digital Signal Processor).

Connect one end of the cinch cable (not supplied) to the DIGITAL OUT socket and the other end to the audio equipment with digital input. When connecting the cinch cable, make sure it is fully inserted.

H Connecting other equipment to your system

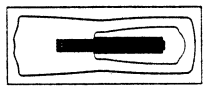
You can connect the audio left and right OUT terminals of a TV, VCR, Laser Disc player, DVD player or CD-Recorder to the AUX IN terminals at the rear of the system.

I AC Power Supply

After all other connections have been made, connect the AC power cord to the system and to the wall outlet.

Inserting batteries into the Remote Control

- Insert the batteries (Type R06 or AA) into the remote control as shown in the battery compartment.



- To avoid damage from possible battery leakage, remove dead batteries or batteries that will not be used for a long time. For replacement, use type R06 or AA batteries.

Controls on the system and remote control

1 **STANDBY ON**
- to switch the system on or to standby mode.
- to use for EASY SET.

2 **STANDBY ON LED**
- the Standby-On LED will be lit when the system is in standby mode *(for model FW590C only)*.

3 **DIGITAL SOUND CONTROL (DSC)**
- to select the desired sound effect: OPTIMAL, CLASSIC, TECHNO, JAZZ, ROCK or VOCAL.

4 **INCREDIBLE SURROUND**
- to switch on or off the surround sound effect.

5 🎧
- to connect headphones.

6 **REC (RECORD)**
- to start recording on tape deck 2.

7 **DUB (HIGH SPEED DUBBING [HSD])**
- to dub a tape in normal or fast speed.

8 **JOG**
- to select the desired equalizer display.
- to select the desired DSC setting. You must select the DSC feature first.
- to select the desired level of Incredible Surround Sound. You must select the Incredible Surround Sound feature first.

9 **PROG (PROGRAM)**
- to program CD tracks in CD mode or preset radio stations in tuner mode.

10 **CLOCK/TIMER**
- to view the clock, set the clock or set the timer.

11 **DISPLAY**
- to view the current setting of the system.

12 **CD CAROUSEL TRAY**

13 **CD DIRECT PLAY (DISC 1 / DISC 2 / DISC 3)**
- to select a CD tray for playback.

14 **DISC CHANGE**
- to change CD(s).

15 **OPEN•CLOSE**
- to open or close the CD carousel.

16 **SOURCE**
- to select the following:
  CD / (CD 1•2•3)
- to select CD mode. When CD playback is stopped, press to select the disc tray 1, 2 or 3.
  TUNER / (BAND)
- to select Tuner mode. When in Tuner mode, press to select the waveband FM or MW.
  TAPE / (TAPE 1• 2)
- to select Tape mode. When tape playback is stopped, press to select either tape deck 1 or 2.
  AUX / (CDR)
- to select sound from an external source (e.g. TV, VCR, Laser Disc player, DVD player or CD Recorder). When in Aux mode, press to select either AUX or CDR.

17 **A. REV (AUTO REVERSE)**
- available in tape deck 2 only.
- to select the desired play modes: ⇄ (⇄), (⇄).

18 **DOLBY B NR**
- to switch on or off the Dolby B NR mode.

19 **RDS**
- to select RDS data in the following order: station name, program type, radio text and frequency.

20 **NEWS/TA**
- to hear News or Traffic Announcement data at a selected time period automatically.

21 **MODE SELECTION**
SEARCH ◀◀ ▶▶ (TUNING ◀◀ ▶▶)
for CD ..... to search backward/forward.
for TUNER .... to tune to a lower or higher radio frequency.
for TAPE ..... to rewind or fast forward.
STOP•CLEAR ■
for CD ..... to stop CD playback or to clear a program.
for TUNER .... to stop programming.
for TAPE ..... to stop playback or recording.
DEMO ..... *(on the system only)* to start or stop demonstration mode.

PLAY ▶ / PAUSE ⏸ (SIDE A•B)
for CD ..... to start or interrupt playback.
for TAPE ..... to start playback.
SIDE: when playing in Tape 2 mode: to change side.
PREV ⏮ / NEXT ⏭ (PRESET ▼ ▲)
for CD ..... to skip to the beginning of the current, previous, or next track.
for TUNER ..... to select a preset station in memory.

22 **MIC LEVEL**
- to adjust the mixing level for karaoke or microphone recording.

23 **MIC**
- to connect microphone jack.

24 **VOLUME**
- to adjust the volume.

25 **DYNAMIC BASS BOOST (DBB)**
- to select a bass boost level or to switch off bass boost.

26 **OPEN**
- to open tape deck 2.

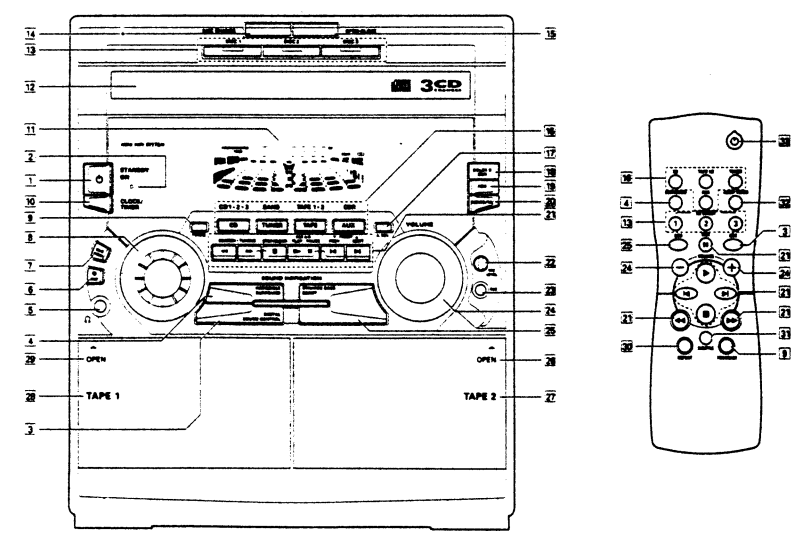
27 **TAPE DECK 2**

28 **TAPE DECK 1**

29 **OPEN**
- to open tape deck 1.

30 **REPEAT**
- to repeat a CD track, a disc, or all the available discs.

31 **SHUFFLE**
- to play all the available discs and their tracks in random order.



30 **SLEEP TIMER**
- to switch the set to standby mode at a selected time period.

31 ⏻
- to switch the system to standby mode.

Notes for remote control:

- ***First select the source you wish to control by pressing one of the source select keys on the remote control (e.g. CD, TUNER, TAPE 1/2 or AUX).***
- ***Then select the desired function (PLAY, NEXT, etc.).***

Important:
Before you operate the system, complete the preparation procedures.

Demonstration mode

The system has a demonstration mode that shows the various features offered by the system. ***When the system is switched on for the first time, the demonstration mode will start automatically.***

Notes:

- *During the demonstration, if you press any source (or standby-on) button, the system will switch to the respective mode (or standby).*
- *When the system is switched to standby mode, the demonstration will resume 5 seconds later.*

To stop the demonstration mode

- Press and hold **STOP•CLEAR ■** *(on the system only)* for ***5 seconds*** when the system is in demonstration mode.
  – The demonstration will stop.
  – "DEMO OFF" is displayed.
  – The system will switch to standby mode.
  – *(for model FW590C only)* About 5 seconds later, the system will go into an energy saving mode (< 2 watts). The low power STANDBY ON LED will be lit.

Note:

- *Even though the AC power cord is removed from and reconnected to the wall socket, the demonstration will remain off until it is switched on again.*

To start the demonstration mode

- Press and hold **STOP•CLEAR** ■ on the system only) for **5 seconds** when the system is in standby mode.
  → The demonstration will begin.

Easy Set

EASY SET allows you to store available radio stations and RDS stations automatically.

1 Press and hold **STANDBY ON** (on the system only) for **5 seconds** when the system is in standby or demonstration mode.
   → "EASY SET" will be displayed and followed by "TUNER" and then "AUTO".
   → EASY SET will start searching for all radio stations with RDS and then followed by radio stations on FM and MW band respectively.
   → All available RDS and radio stations with sufficient signal strength will be stored. Up to 40 presets may be stored.
2 The system will search once again for the first available RDS station in order to set the RDS time automatically.
- If no RDS station is available, the program will exit automatically.
  → After a radio station is found, "EASY SET" will be displayed and followed by "TIME".
- When searching RDS time,
  → "SEARCH RDS TIME" will be displayed.
  → When RDS time is read, "RDS TIME" will be displayed. The current time will be displayed for 2 seconds and stored automatically.

Notes:
- *EASY SET will start with the RDS station, if there are still presets available, it will continue to store the FM and MW bands respectively.*
- *When EASY SET is used, all previously stored radio stations will be replaced.*
- *The last preset radio station or the first available RDS station will appear on the display when EASY SET is completed.*
- *If RDS station does not transmit RDS time within 90 seconds, the program will exit automatically and the display will show "NO RDS TIME".*

Switching the system ON

- Press **STANDBY ON** (on the system only), **CD**, **TUNER**, **TAPE** or **AUX**.

You can also switch on the system by pressing any one of the CD DIRECT PLAY buttons.

Switching the system to standby mode

- Press **STANDBY ON** again or ⏻ on the remote control.
  → The system will switch to standby mode.
  → (for model: FW590C only)
  About 5 seconds later, the system will go into an energy saving mode (< 2 watts). The low power STANDBY ON LED will be lit.

Selecting the Source

- Press the respective source selection button: **CD**, **TUNER**, **TAPE** or **AUX**.
  → The display indicates the selected source.

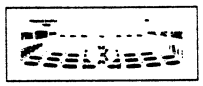
Note:
- *For an external source, make sure you have connected the audio left and right OUT terminals of the external equipment (TV, VCR, Laser Disc player, DVD player or CD Recorder) to the AUX IN terminals.*

Selecting the Equalizer Display

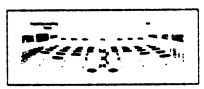
You can select the desired equalizer display for the system. You must not press the DSC button on the system before using the JOG.

- Rotate the **JOG** to select the desired Equalizer Display, NORMAL, TOP DOWN, or NITE MODE.
  → The selected display will be shown.

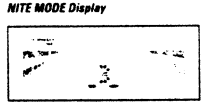
NORMAL Display



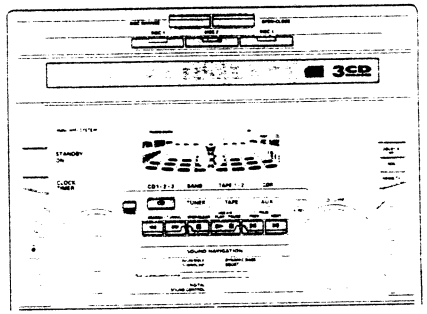
TOP DOWN Display



NITE MODE Display



Note:
- *In NITE MODE, all lights will be switched off and the display brightness will be dimmed.*



Warning!

1) This system is designed for conventional CDs. Do not use any accessories such as disc stabilizer rings or CD treatment sheets, etc., which may damage the CD mechanism.

2) Do not load more than one disc into each tray.

3) When the CD changer is loaded with CDs, do not turn over or shake the system. This may jam the changer.

You may load three discs in the CD changer for continuous playback without interruption.

Disc for playback

This system can playback all audio CD, finalized audio CD-Recorder and finalized audio CD-Rewritable format discs.

Loading the CD Changer

1 Press **CD** to select CD mode.
2 Press **OPEN•CLOSE**.
   → The CD carousel slides out.
3 Load a CD with the printed side up in the right tray.
- You can load another disc in the left tray.
- To load the third disc, press the **DISC CHANGE** button.
  → The CD carousel will rotate until the empty tray is ready for loading.
4 Press **OPEN•CLOSE** to close the CD carousel.
   → The total number of tracks and the playing time of the last selected disc appear on the display.

Note:
- *To ensure good system performance, wait until the CD changer completely reads the disc(s) before proceeding.*

CD Direct Play

You can play a CD directly by pressing the **DISC 1**, **DISC 2** or **DISC 3** button. The CD player will stop at the end of playback of the selected disc.

- A lit button indicates that a disc is loaded in the disc tray.

Playing a CD

1 Press **PLAY** ▶ to start playback.
   → The disc tray, track number and elapsed playing time of the current track appear on the display.
- To interrupt playback, press **PAUSE** ❚❚.
  → The playing time flashes.
- To resume playback, press **PLAY** ▶ again.
2 To stop playback, press **STOP•CLEAR** ■.

Note:
- *All the available discs will play once, then stop.*

Disc Change

You can change the outer two discs while the third inner disc is stopped or is playing.

1 Press **DISC CHANGE**.
   → The CD carousel slides out.
2 Replace the discs in the left and right disc trays.
- If you press **DISC CHANGE** again during playback, the CD will stop playing.
  → The CD carousel will rotate until the inner tray is rotated out and is ready for loading.
3 Press **OPEN•CLOSE** to close the CD compartment.

Sound Control

VOLUME ADJUSTMENT

Adjust **VOLUME** to increase or decrease the sound level.

For Personal Listening

Connect the headphones plug to the 🎧 socket at the front of the system. The speakers will be muted.

INCREDIBLE SURROUND

Normal stereo sound is determined by the distance between the front speakers. When Incredible Surround is switched on, it magnifies the virtual distance between the front speakers for an incredibly wide, enveloping, stereo effect. There are 12 different Incredible Surround levels available for selection.

- Press **INCREDIBLE SURROUND** to switch on.
  → The INCREDIBLE SURROUND display lights up.
  → "IS XX" will be displayed.

Note:
- *"XX" is the last selected Incredible Surround level.*

You can change the Incredible Surround level with the JOG.

- Rotate the **JOG** to select the desired Incredible Surround level immediately after selecting the Incredible Surround feature.
  → The Incredible Surround level will increase or decrease between level 1 and 12.

To switch off Incredible Surround

- Press **INCREDIBLE SURROUND** again.
  → The INCREDIBLE SURROUND display is switched off.
  → "IS OFF" will be displayed.

DIGITAL SOUND CONTROL (DSC)

The DSC feature enables you to adjust the system to suit your type of music.

- Press **DIGITAL SOUND CONTROL (DSC)** to select OPTIMAL, CLASSIC, TECHNO, JAZZ, ROCK or VOCAL.
  → The selected digital sound is encircled.
  → "OPTIMAL X, CLASSIC, TECHNO X, JAZZ X, ROCK X or VOCAL X" will be displayed. "X" is the pre-selected level.

You can change the digital sound setting level for all but CLASSIC with the JOG.

- First select the DSC feature, then rotate the **JOG** until the desired digital sound setting level is reached.
  → The digital sound setting level will increase or decrease between level 1 and 5.

Note:
- *For neutral setting, select CLASSIC and switch off DBB.*

DYNAMIC BASS BOOST (DBB)

There are three DBB settings to enhance the bass response.

- Press **DBB** briefly to select a bass boost level.
  → The respective DBB level is being encircled and lit.
  → "BEAT, PUNCH or BLAST" will be displayed.

To switch off DBB

- Press **DBB** briefly until "DBB OFF" is displayed.

Note:
- *Some CDs or tapes might be recorded in high modulation. It may cause a distortion at high volume. If this occurs, switch off DBB or reduce the volume.*

Automatic DSC-DBB selection

The best DBB setting is generated automatically for each DSC selection. You can manually select the DBB setting that best suits your listening environment.

Selecting a desired track

Selecting a desired track when playback is stopped

1 Press **PREV** ⏮ or **NEXT** ⏭ until the desired track appears on the display.
2 Press **PLAY** ▶ to start playback.
   → The selected track number and elapsed playing time appear on the display.

Selecting a desired track during playback

- Press **PREV** ⏮ or **NEXT** ⏭ until the desired track appears on the display.
  → The selected track number and elapsed playing time appear on the display.
- If you press **PREV** ⏮ once it will skip to the beginning of the current track and play the track again.

Searching for a particular passage during playback

- Press and hold ◀◀ or ▶▶ until the desired passage is located.
  → The volume will be reduced.
- Play returns to normal when ◀◀ or ▶▶ is released.

Programming Tracks

Programming tracks of a loaded CD is possible when playback is stopped. The display will indicate the total tracks stored in the program. Up to 40 tracks can be stored in the memory in any order. When 40 tracks are stored and you attempt to store another track, the display will show "FULL".

1 Load the desired discs in the disc trays.
2 Press **PROGRAM** to start programming.
   → The PROGRAM flag starts flashing.
3 Press the **CD** (CD 1•2•3) button to select the disc.
4 Press **PREV** ⏮ or **NEXT** ⏭ to select the desired track.
5 Press **PROGRAM** to store the track.
- Repeat steps *3* to *5* to store other discs and tracks.
6 Press **STOP•CLEAR** ■ once to end programming.
   → The total number of tracks programmed and total playing time appear on the display.

Notes:
- *If the total playing time is more than "99:59" or if one of the programmed tracks has a number greater than 30, then "- - : - - " appears on the display instead of the total playing time.*
- *During programming, if no button is pressed within 20 seconds, the system will exit program mode automatically.*

Reviewing the program

Reviewing of the program is possible only when playback is stopped.

- Press **PREV** ⏮ or **NEXT** ⏭ repeatedly to review the programmed tracks.
- Press **STOP•CLEAR** ■ to exit review mode.

Playing the program

1 Press **PLAY** ▶ to start program playback.
   → "PLAY PROGRAM" appears on the display.
   → The track number and elapsed playing time of the current track will appear on the display.
- If you press **REPEAT** during program playback, the current track will be played repeatedly.
   → The REPEAT and PROGRAM flags will be displayed.
2 Press **STOP•CLEAR** ■ to stop program playback.

Notes:
- *If you press any of the CD DIRECT PLAY buttons, the system will play the selected disc or track and the stored program will be ignored temporarily. The PROGRAM flag also will disappear temporarily from the display. It will reappear when playback of the selected disc ends.*
- *REPEAT DISC mode will be cancelled when program playback begins.*

Erasing the program *(when playback is stopped)*

- Press **STOP•CLEAR** ■.
  → "PROGRAM CLEARED" will be displayed.

Note:
- *The program will be erased when the system is disconnected from the power supply or when the CD carousel is opened. If the CD carousel is opened, the tracks belonging to the outer two trays will be erased and the display will show "TRACKS CLEARED".*

Shuffle *(only on remote control)*

In shuffle mode, the system plays all the available discs and their tracks in random order. Shuffle may be used also when tracks are programmed.

To shuffle all the discs and tracks

1 Press **SHUFFLE**.
   → "SHUFFLE" will be displayed.
   → The SHUFFLE flag, the disc and the track selected at random appear on the display.
- The discs and the tracks will be played in random order until you press **STOP•CLEAR** ■.
- If you press **REPEAT** during shuffling, the current track or all available discs will be played repeatedly.
  → The REPEAT and SHUFFLE flags will be displayed.

2 Press **SHUFFLE** again to resume normal playback.
→ "The SHUFFLE flag disappears from the display.

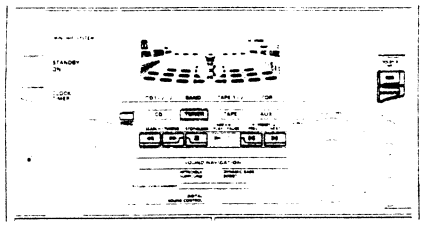
Note:
– *REPEAT DISC mode will be cancelled when shuffle begins.*

Repeat *(only on remote control)*

You can play the current track, a disc or all available discs repeatedly.

1 Press **REPEAT** on the remote control during CD playback to select the various repeat modes.
→ "TRACK", "DISC", "ALL" or "OFF" will be displayed.
→ The REPEAT flag appears on the display.
• The selected track, selected disc or all available discs will now be played repeatedly until you press **STOP•CLEAR ■**.
2 Press **REPEAT** until the "OFF" mode is displayed to resume normal playback.
→ The REPEAT flag disappears from the display.

Note:
– *REPEAT DISC mode is not available during program play or shuffling mode.*



Note:
– *For "EASY SET" feature, please refer to page 11.*

Tuning to radio stations

1 Press **TUNER** (BAND) to select TUNER mode.
→ "TUNER" will be displayed.
A few seconds later, the current radio frequency will be displayed.
2 Press **TUNER** (BAND) again to select the desired waveband : FM or MW.
3 Press **TUNING ◀◀** or **▶▶** for more than one second, then release.
→ The display will show "SEARCH" until a radio station with sufficient signal strength is found.
• Repeat this procedure until the desired station is reached.
• To tune to a weak station, briefly press **TUNING ◀◀** or **▶▶** repeatedly until the display shows the desired frequency and/or when the best reception has been obtained.

Storing Preset Stations

You can store up to 40 radio stations in the memory. When a preset radio station is selected, the preset number appears next to the frequency on the display.

Automatic programming
1 Press **TUNER** (BAND).
2 Press **PROGRAM** for more than one second.
→ The PROGRAM flag starts flashing and "AUTO" will be displayed.

News/TA (News/TA (Traffic Announcement) *only available in Radio Station with RDS)*

You can activate NEWS or TA function in Standby, Demonstration or any source mode except Tuner mode. Once the News Program Type (for NEWS function) or Traffic Announcement data (for TA function) is detected in any of the selected RDS stations, it will switch to TUNER mode automatically.

NEWS/TA key toggles in the following sequence:

NEWS → TA → OFF → NEWS

To start NEWS or TA function
1 Press **NEWS/TA** to select NEWS function.
→ The NEWS flag and "NEWS" will be displayed.
• If you want to select TA function, press **NEWS/TA** again.
→ The TA flag and "TA" will be displayed.
2 When NEWS or TA is selected,
• It will search for the first 5 available preset RDS stations and wait for the News Program Type / Traffic Announcement data to be available in any of these RDS stations. During the search :
→ The current source activity will remain uninterrupted.
→ If no RDS station is found in the first 5 presets after the search, the NEWS/TA function will be switched off. The display will show "NO RDS NEWS" or "NO RDS TA" and NEWS or TA flag will disappear from the display.
• When NEWS/TA transmission is detected, the system will switch to Tuner mode.
→ The NEWS or TA flag starts flashing.

To cancel NEWS or TA function
• Press **NEWS/TA** until the NEWS or TA flag disappears and "TA OFF" is displayed.
→ The last selected source mode will resume.

Notes:
– *If you are listening to a non RDS TUNER radio station and should you decide to hear NEWS or TA, first select other source (e.g. CD, TAPE or AUX), then press NEW/TA.*
– *Before using the NEWS or TA feature, ensure that the first 5 presets are RDS stations.*
– *The NEWS/TA works only once for each activation.*
– *During News bulletin or Traffic Announcement, you can press any available source or Tuner function keys to cancel NEWS/TA function and execute the relevant source mode.*
– *If set is switched to Tuner source, the NEWS/TA function will be cancelled. "NEWS OFF" or "TA OFF" will be displayed immediately after the "TUNER" message.*

Switching On the lower FM 1 Band *(For Russia Only)*

You can switch on the lower FM Band for wider reception.

1 Disconnect the system from the AC power supply (pull out the AC power cord).
2 Press and hold **TUNER** and **TUNING ▶▶** while reconnecting the system to the AC power supply.
→ Display will show "FM 1 ON".

Notes:
– *The FM Band preset in the factory is FM2 (87.5 – 108 MHz).*
– *To switch off the FM 1 band, repeat the steps above. "FM 1 OFF" will be displayed.*

→ The system will search for every available station in the FM waveband first, then search the MW waveband.
→ All available stations will be stored automatically. The frequency and preset number will be displayed briefly.
→ The system will stop searching when all the available radio stations are stored or when the memory for 40 preset radio stations is used.
→ The system will remain tuned to the last stored preset radio station.

Notes:
– *You can cancel the automatic programming by pressing PROGRAM or STOP•CLEAR ■ (on the system only).*
– *If you want to reserve a section of preset numbers, for example, preset numbers 1 to 9, select preset 10 before starting automatic programming; only the preset numbers 10 to 40 will be programmed.*

Manual programming
1 Press **TUNER** (BAND).
2 Press **TUNER** (BAND) again to select the desired waveband : FM or MW.
3 Press **PROGRAM** for less than one second.
→ The PROGRAM flag starts flashing.
→ The next available preset number will be displayed for selection.
4 Press **TUNING ◀◀** or **▶▶** to tune to the desired frequency.
• If you wish to store the radio station to another preset number, press **PRESET ▼** or **▲** to select the desired preset number.
5 Press **PROGRAM** again.
→ The PROGRAM flag disappears and the radio station will be stored.
• Repeat the *steps 3 to 5* to store other preset radio stations.

Notes:
– *When 40 radio stations are stored and you attempt to store another radio station, the display will show "FULL". If you want to change an existing preset number, repeat steps 3 – 5.*
– *You can cancel manual programming by pressing STOP•CLEAR ■ (on the system only).*
– *During programming, if no button is pressed within 20 seconds, the system will exit program mode automatically.*

Tuning to Preset Radio Stations

• Press **PRESET ▼** or **▲** to select the desired preset number.
→ The preset number, radio frequency, and waveband appear on the display.

Receiving RDS Radio Station

RDS (Radio Data System) is a broadcasting service that allows FM stations to send additional information along with the regular FM radio signal. This additional information can contain:

• **STATION NAME:** The radio station name is displayed.
• **FREQUENCY:** The frequency of the radio station is displayed.
• **PROGRAM TYPE:** The following program types exist and can be received by your tuner: News, Affairs, Info, Sport, Educate, Drama, Culture, Science, Varied, Pop M, Rock M, M.O.R. (middle of the road music), Light M, Classics, Other M, No type.
• **RADIO TEXT (RT):** text messages appear in the display.

When you have tuned to a RDS station, the RDS logo (RDS) and the radio station name will appear on the display.

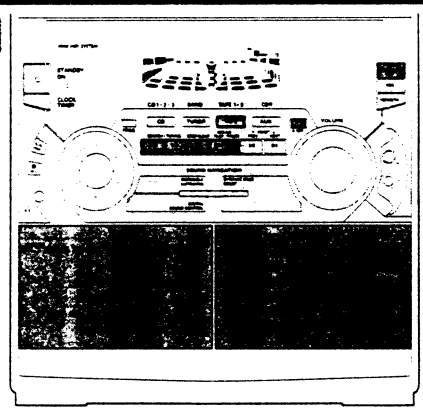
• The display normally shows the radio station name if available.
By repeatedly pressing **RDS** button you can change the type of display information:
→ The display shows in turn:
STATION NAME → PROGRAM TYPE → RADIO TEXT → FREQUENCY → STATION NAME ...

Note:
– *When you press the RDS button and the display shows "NO RDS", it indicates that either the tuned station is not transmitting RDS signal or it is a non RDS station.*

RDS Clock

Some RDS station may be transmitting a real clock time at an interval of every minute.

Setting the time with RDS clock
1 Press **CLOCK/TIMER**.
→ "- - : - -" or current time appears on the display.
2 Press **CLOCK/TIMER** once more to enter clock setting mode.
→ "00:00" or current time starts flashing.
3 Press **RDS**.
→ The message "SEARCH RDS TIME" will be displayed.
→ If the station does not transmit RDS clock, "NO RDS TIME" will be displayed.
→ When the RDS clock is read, "RDS TIME" will be displayed. The current clock time is displayed for 2 seconds and will be stored automatically.
→ If within 90 seconds, the RDS time is not detected, "NO RDS TIME" will be displayed.



Loading a tape

• Press **OPEN**.
• The tape deck door opens.
• Load the tape with the open side downward and the full spool to the left.
• Close the tape deck door.

Tape Playback

1 Press **TAPE** (TAPE 1•2) to select TAPE mode.
→ "TAPE 1" or "TAPE 2" will be displayed.
• Press **TAPE** (TAPE 1•2) again to select either tape deck 1 or tape deck 2.
2 Load the tape into the desired tape deck.
3 Press **▶** to start playback.
3a (For Tape Deck 2 only)
Press **▶** (SIDE A•B) again to switch playback between side A and B.
→ The BACK or REWIND flag appears on the display, depending on the side selected.
3b (For Tape Deck 2 only)
Press **A. REV** to select the different type of playback mode *(see auto reverse playback)*.
4 Press **■** to end playback.

Notes:
– *To change side before playback begins, use the SIDE button on the remote control.*

Auto Reverse Playback *(only on tape deck 2)*

• Press **A. REV** to select the different playback modes.
→ ..... to record or playback on one side of the tape. The tape stops at the end of one side.
→ ..... to record or playback on both sides of the tape. The tape then stops.
→ ..... to playback continuously on both sides of the tape up to a maximum of 10 times per side unless you press **■**.

Rewind/Fast Forward

When playback is stopped
1 You can rewind or fast forward the tape by pressing **◀◀** or **▶▶** respectively.
→ "<<<" or ">>>" will be displayed depending on which button is pressed.
→ The tape will stop automatically at the end of the rewinding or fast forwarding.
2 Press **■** to stop rewinding or fast forwarding.

During playback

- Press and hold ◀◀ or ▶▶ until the desired passage is located.
  → During searching, the sound is reduced to a low volume.
  → When you release ◀◀ or ▶▶ the tape continues playing.

Notes:

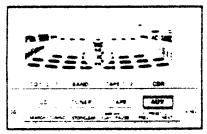
- *During rewinding or fast forwarding of a tape, it is also possible to select another source (e.g. CD, TUNER, or AUX).*
- *Before use, check and tighten slack tape with a pencil. Slack tape may get jammed or may burst in the mechanism.*
- *C-120 tape is extremely thin and is easily deformed or damaged. It is not recommended for use in this system.*
- *Store the tapes at room temperature and do not put them too close to a magnetic field (for example, a transformer, TV, or speaker).*

Dolby B Noise Reduction System

1 Press **DOLBY B NR** to switch on Dolby B NR.
→ The ⊐⊏ B NR appears on the display.
2 Press **DOLBY B NR** again to switch off Dolby B NR.
→ The ⊐⊏ B NR disappears from the display.

Note:

- *A tape recorded with the Dolby B NR system should also be played in the Dolby B NR mode. If you forget to operate the DOLBY NR button, the treble may be reproduced too strongly.*



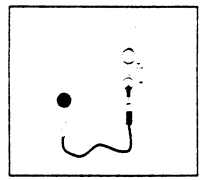
Selecting External Equipment

If you have connected the audio out terminals of the external equipment (TV, VCR, Laser Disc player, DVD player, or CD Recorder) to the AUX IN terminals, you can hear the enhanced sound from the system.

- Press **AUX** to select the external mode.
  → "AUX" will be displayed.
- Press **AUX** again to select AUX-CDR mode.
  → "CDR" will be displayed.

Notes:

- *There are two AUX modes:*
  i. the normal AUX mode
  ii. the CDR mode, where the LINE OUT of this mini system is muted. You will not be able to record or listen to the sound from the LINE OUT.
- *You are advised not to listen to and record from the same source simultaneously.*
- *All the sound control features (e.g. DSC, DBB, etc.) are available for selection.*



Microphone Mixing

1 Set the **MIC LEVEL** control to the minimum level to prevent acoustic feedback (e.g. a loud howling sound) before you connect the microphone.
2 Connect a microphone to the **MIC** socket.
3 Press **CD**, **TUNER**, **TAPE** or **AUX**.
4 Play the selected source.
5 Adjust the volume level with **VOLUME** control.
6 Adjust the **MIC LEVEL** control to the mixing level that you want.
7 Start singing or talking through the microphone.

Note:

- *Keep the mic away from the speakers to prevent howling.*

Notes:

- *Only ⊐ or ⊐⊐ mode is available during recording.*
- *During recording, it is not possible to listen to another source.*

Dubbing tapes *(from tape deck 1 to tape deck 2)*

1 Press **TAPE** (TAPE 1•2) to select tape deck 2.
2 Load the prerecorded tape into tape deck 1 and a blank tape into tape deck 2.
→ Make sure the tape in tape deck 1 has its full spool to the left.
3 *(For "tape Deck 2 only)*
Press **SIDE** on the remote control to select the recording side.
4 Press **A. REV** to select the playback mode (⊐).
5 Press **DUB (HSD)** **once** for normal speed dubbing or **twice** within 2 seconds for high speed dubbing.
→ "NORMAL" (normal speed) or "FAST" (high speed) will be displayed, followed by "DUBBING".
→ The ■■■ flag appears on the display during high speed dubbing.
- Dubbing will start immediately.
→ The ■■■ flag starts flashing.
6 Press ■ to stop dubbing.

Notes:

- *Only ⊐ mode is available during recording.*
- *At the end of side A, flip the tapes to side B and repeat the procedure.*
- *Dubbing of tapes is only possible from tape deck 1 to tape deck 2.*
- *To ensure good dubbing, use tapes of the same length.*
- *During high speed dubbing in Tape mode, the sound is reduced to a low volume.*
- *You can listen to another source while dubbing.*
- *Dolby NR button has no influence during dubbing (dubbing from tape deck 1 to tape deck 2). An original tape recorded with Dolby B NR automatically produces a copy with Dolby B NR.*

Recording the mixed sound / One Touch Recording

- During microphone mixing, you can record the mixed sound on a tape in tape deck 2 except dubbing mode.
- For One Touch Recording, as soon as you press **REC**, the current source (CD, TUNER or AUX) will be recorded on tape deck 2.

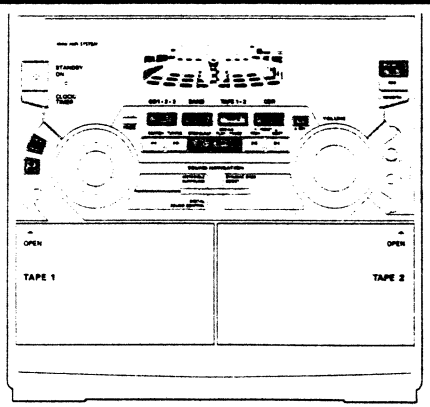
1 Load a blank tape in tape deck 2.
2 Press **REC** to start recording.
→ The ■■■ flag starts flashing.
3 Press ■ to stop recording.

Note:

- *When you press RECORD while in TAPE mode, "SELECT SOURCE" will be displayed. One Touch Recording is not possible in TAPE mode.*

Digital Recording via Digital Out

For CD digital recording, please refer to the instructions Manual of the CD Recorder, digital audio equipment, etc.



Notes:

- *If you do not intend to record via the microphone, unplug the microphone to avoid accidental mixing with other recording source.*
- *For recording, use only tape of IEC type I (normal tape) or IEC type II (CrO_2).*
- *The tape is secured at both ends with leader tape. At the beginning and end of tape, nothing will be recorded for 6 to 7 seconds.*
- *The recording level is set automatically, regardless of the position of Volume, DBB, Incredible Surround or DSC. Dolby B NR can be selected for Tuner or CD recording.*
- *To prevent accidental recording, break out the tab on the left shoulder of the tape side you want to protect.*
- *If "CHECK TAPE" is displayed, the protection tab has been broken. Put a piece of clear adhesive tape over the opening. Do not cover the CrO_2 tape detection hole when covering the tab opening.*

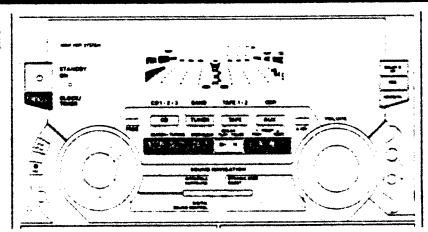
CD Synchro Start Recording

1 Load a blank tape into tape deck 2 and a disc into a disc tray.
2 Press **CD** to select CD mode.
- You can program the tracks in the order you want them to be recorded (see Programming Tracks). If you do not, the tracks are recorded according to the order on the selected disc.
3 Press **REC** to start recording.
→ The ■■■ flag starts flashing.
- CD will start playback automatically.
4 Press ■ to stop recording.

Recording from other sources

(only on tape deck 2)

1 Press **TAPE** (TAPE 1•2) to select tape deck 2.
2 Load a blank tape into tape deck 2 with the open side downward.
3 Press **SIDE** on remote control to select the recording side.
→ The ■■■ or ■■■■ flag will be displayed, depending on the side selected.
4 Press **A. REV** to select the playback mode (⊐ or ⊐⊐).
5 Press **DOLBY NR** to record with Dolby NR *(except in TAPE 1 mode)*.
6 Press **CD**, **TUNER** or **AUX**.
- Start playback of the selected source.
7 Press **REC** to start recording.
→ The ■■■ flag starts flashing.
8 Press ■ to stop recording.



Viewing the Clock

You can view the clock (if it is set) while the system is in standby mode or any source mode. It will be displayed for about 7 seconds.

- Press **CLOCK/TIMER** briefly *(on the system only)*.
→ "10:38" (the current time) will be displayed.
→ "- - : - -" will be displayed if the clock is not set.

Setting the Clock

The clock is set in 24-hour mode, e.g. "00:00" or "23:59". Before setting the clock, you must be in the View Clock mode.

1 Press **CLOCK/TIMER** to select clock mode.
→ "00:00" or the current time starts flashing.
2 Set the hour with ◀◀ or ▶▶.
3 Set the minute with ⏮ or ⏭.
4 Press **CLOCK/TIMER** again to store the setting.
→ The clock starts.
- To exit without storing the setting, press ■ on the system.

Notes:

- *During clock setting, if no button is pressed within 90 seconds, the system will exit clock setting mode automatically.*
- *When a power interruption occurs, the clock setting is erased.*
- *To set the time with RDS clock, see "Receiving RDS Radio Station" under TUNER section.*

Setting the Timer

- The system can switch on to CD, TUNER, or TAPE 2 mode automatically at a preset time. It can serve as an alarm to wake you up.
- Before setting the timer, make sure the clock is set correctly.
- The timer will always be switched on once it is set.
- **The volume of the timer will start to increase from the minimum level until the volume level before the set is switched to standby mode.**

1 Press and hold **CLOCK/TIMER** for more than 2 seconds to select timer mode.
→ "00:00" or the last set timer starts flashing. The ■■■■ flag flashes.
→ The last selected source is lit while other available sources are flashing.
2 Press **CD**, **TUNER** or **TAPE** to select the desired source.
- Before selecting CD or TAPE, make sure a CD or tape is loaded in the CD tray or tape deck 2.
3 Press ◀◀ or ▶▶ to set the hour for the timer to start.
4 Press ⏮ or ⏭ to set the minute for the timer to start.
5 Press **CLOCK/TIMER** to store the start time.
→ The timer is now set.
→ The ■■■■ flag remains on the display.
- To exit without storing the setting, press ■ on the system.
- At the preset time, the timer will be activated.
→ The selected source will be played.

Notes:

- *During timer setting, if no button is pressed within 90 seconds, the system will exit timer setting mode automatically.*
- *If the source selected is TUNER, the last tuned frequency will be switched on.*
- *If the source selected is CD, playback will begin with the first track of the last selected disc. If the CD trays are empty, the TUNER will be selected instead.*
- *If the source selected is TAPE, and if the preset time is reached during high speed dubbing, the TUNER will be selected instead.*

TIMER

To switch off the TIMER

1 Press **CLOCK/TIMER** for more than 2 seconds.
2 Press ■ on the system to cancel the timer.
→ The timer is now switched off.
→ The display will show "OFF" and the TIMER flag disappears.

To start the TIMER again *for the same preset time and source.*

1 Press **CLOCK/TIMER** for more than 2 seconds.
2 Press **CLOCK/TIMER** again to store the start time.
→ The timer is now switched on.
→ The TIMER flag appears on the display.

SLEEP TIMER

Sleep Timer *only on remote control.*

This feature allows you to select a length of time after which the system will switch to the standby mode automatically.

- Press **SLEEP TIMER** on the remote control repeatedly to select a period of time.
→ The selections are as follows (time in minutes):
60 → 45 → 30 → 15 → OFF → 60
→ "SLEEP XX" or "OFF" will be displayed. "XX" is the time in minutes.
- When you reach the desired length of time, stop pressing the **SLEEP TIMER** button.
→ After this amount of time passes, the system will switch to the standby mode.

To switch off the sleep timer

- Press **SLEEP TIMER** repeatedly until "OFF" is displayed, or press the **STANDBY ON** button.

MAINTENANCE

Maintenance

Cleaning the Cabinet

- Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

Cleaning Discs

- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the center out.
- Do not use solvents such as benzine, thinner, commercially available cleaners, or antistatic spray intended for analog records.

Cleaning the CD lens

- After prolonged use, dirt or dust may accumulate at the CD lens. To ensure good playback quality, clean the CD lens with Philips CD Lens Cleaner or any commercially available cleaner. Follow the instructions supplied with cleaner.

Cleaning the Heads and the Tape Paths

- To ensure good recording and playback quality, clean the heads, the capstan(s), and pressure roller(s) after every 50 hours of tape operation.
- Use a cotton swab slightly moistened with cleaning fluid or alcohol.
- You can also clean the heads by playing a cleaning tape once.

Demagnetizing the heads

- Use a demagnetizing tape available at your dealer.

TROUBLESHOOTING

Warning! Under no circumstances you should try to repair the set yourself as this will invalidate the guarantee. Do not open the set as there is a risk of electric shock.

- If a fault occurs, check the points listed below before taking the system for repair.
- Should any problems persist after you have made these checks, consult your nearest dealer or service center.

CD Player Operation

"NO DISC" is displayed.

- The disc is inserted upside down.
→ *Place CD with printed side up.*
- Moisture condensation at the lens.
→ *Wait until lens has adjusted to normal room temperature.*
- There is no disc in the CD tray.
→ *Insert a CD.*
- The CD is dirty, badly scratched or warped.
→ *Clean or replace the CD.*
- The CD lens is dirty or dusty.
→ *See section under Maintenance.*

"DISC NOT FINALISED" is displayed.

- The CD-RW or CD-R disc is not properly recorder for the use of a standard CD player.
→ *Read the instruction booklet of your CD-Rewritable or CD-Recorder on how to finalize a recording.*
- The CD is badly scratched or dirty.
→ *Replace or clean CD.*

Radio Reception

Poor radio reception.

- The signal is too weak.
→ *Adjust the antenna.*
→ *Connect an external antenna for better reception.*
- The TV or VCR is too close to the stereo system.
→ *Separate the stereo system from the TV or VCR.*

"NO RDS TEXT" is displayed.

- RDS text message is not available.
→ *Select another RDS station.*

Tape Deck Operation

Recording or playback cannot be made or there is a decrease in audio level.

- Dirty tape heads, capstans or pressure rollers.
→ *See section on tape deck maintenance.*
- Magnetic build-up in the record/playback head.
→ *Use demagnetizing tape.*

General

System does not react when any button is pressed.

- Electrostatic discharge.
→ *Press STANDBY-ON to switch the system off. Remove the AC power plug from the wall outlet, then reconnect the power plug and switch on the system again.*

No or poor sound.

- Volume is not turned up.
→ *Adjust VOLUME.*
- The headphones are connected.
→ *Disconnect the headphones.*
- Speakers are not connected or are connected wrongly.
→ *Check that the speakers are connected correctly.*
→ *Make sure the stripped speaker wire is clamped.*

Reversed left and right sound.

- Speakers are connected wrongly.
→ *Check the speaker connections and location.*

Lack of bass sound or apparently imprecise physical location of musical instruments.

- Speakers are connected wrongly.
→ *Check the speaker connection for proper phasing, red/black wires to red/black terminals.*

Remote control has no effect on the system.

- Wrong source is selected.
→ *Select the source (CD, TUNER, etc.) before pressing the function button. (PLAY, PREV/NEXT, etc.).*
- The distance to the system is too large.
→ *Reduce the distance.*
- Batteries are inserted incorrectly.
→ *Insert the batteries with their polarities (+/– signs) as indicated.*
- Batteries are exhausted.
→ *Replace the batteries.*

Timer not working.

- Clock is not set.
→ *Set the clock.*
- Timer is not switched on.
→ *Press CLOCK/TIMER to switch on the timer.*
- Dubbing/recording is in progress.
→ *Stop dubbing/recording.*

Clock setting is erased.

- There was a power failure.
→ *Reset the clock.*

System displays features automatically; buttons flash continuously.

- Demonstration mode is switched on.
→ *Press and hold ■ on the system only) for 5 seconds to switch off the demonstration.*

A howling sound at external source.

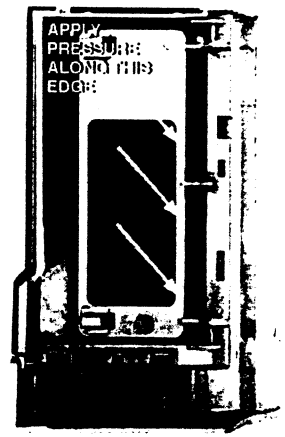
- You hear feedback when you are listening and recording from the same source simultaneously.
→ *Press AUX to select CDR mode.*

English

DISMANTLING INSTRUCTIONS

Dismantling of the Cassette Cover

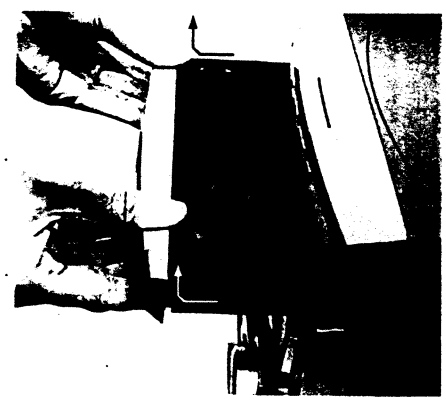
Remove Cassette Door



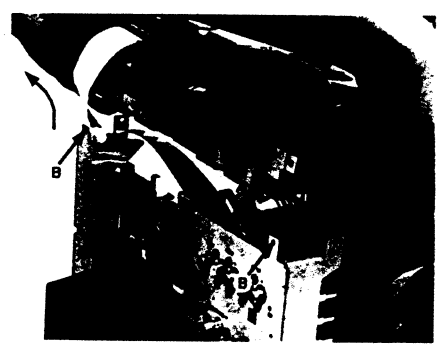
Cassette Door

Dismantling of the CDC Module and Front Panel

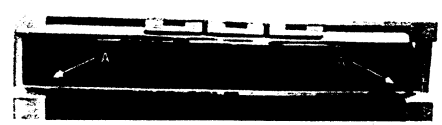
1) Loosen the 17 screws to remove the Cabinet Rear (pos 259) of the set :-
   - 5 screws each on the left side & right side of the Cabinet Rear.
   - 7 screws at the rear of the Cabinet Rear.
2) Slide out the CDC tray and remove the Cover CDC (pos 107) as indicated.
3) Loosen 2 screws A and 2 screws B to remove the CDC Module (pos 1104) as indicated.
4) Remove 1 screw (pos 305) at the bottom to separate the Front Panel Assembly from the Plate Bottom (pos 236).



Remove Cover CDC



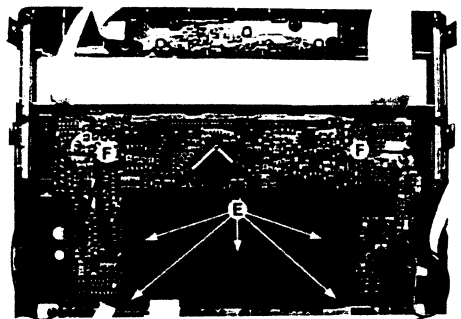
Remove CDC Module

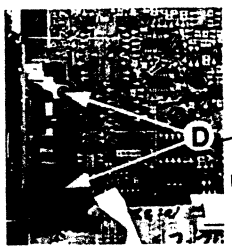


Front CDC

Dismantling of the Front Board

1) Remove 1 screw C as indicated to loosen the Headphone Board (pos 1101-A).
2) Remove 2 screws D as indicated to loosen the Karaoke Board (pos 1102-C) for set with karaoke.
3) Remove 5 screws E as indicated to loosen the Plate Front (pos 254).
4) Remove 4 screws F as indicated to loosen the Front Board (pos 1102-A).



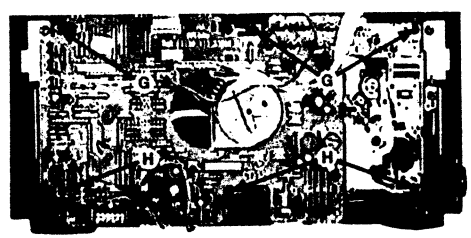


Remove Karaoke Board

Remove Headphone Board

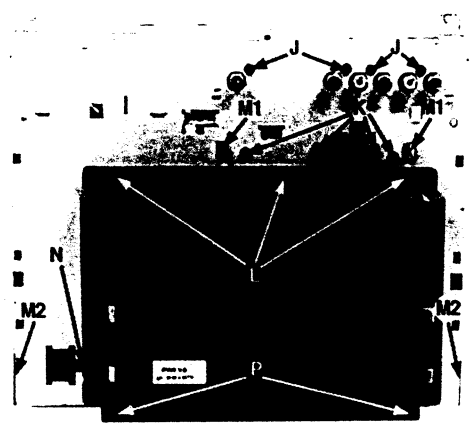
Dismantling of the ETF Module

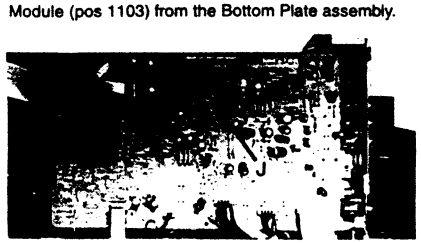
1) Remove 6 screws (3 screws G and 3 screws H) as indicated to loosen the ETF5 Module (pos 1105).



Dismantling of Plate Rear and Power Module

1) Remove 5 screws J as indicated to loosen the AF Board (pos 1101-B).
2) Remove 4 screws K and uncatch M1 as indicated to loosen the Tuner Board (pos 1100).
3) Remove 3 screws L and 1 screw N (if obstructed) and uncatch M2 as indicated to take out the Plate Rear(pos 234).
4) Remove 2 screws P as indicated to free the Power Module (pos 1103) from the Bottom Plate assembly.





Top View

Repair Hints

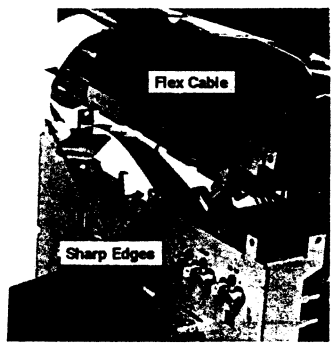
1) The Jog Rotary (pos 142) can be remove by inserting a strong string into the slot and pull it out in the direction as indicated. See picture 1.

3) During re-assembly of the set, care should be taken to dress all the flex cable wires properly to prevent any damaged cause by any sharp metal edges or any other metal parts. See picture 2.

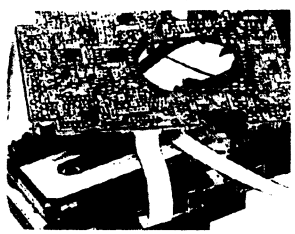
4) Due to the short flex cable wires in the ETF Module, the pc board should be disconnected and reconnected on the reverse side of the tape mechanism to keep it electrically connected during repair. See picture 3.

5) During repair it is possible to disconnect the Tuner board and CDC Module completely unless the fault is suspected to be in that area. This will not affect the performance of the rest of the set.

Picture 1

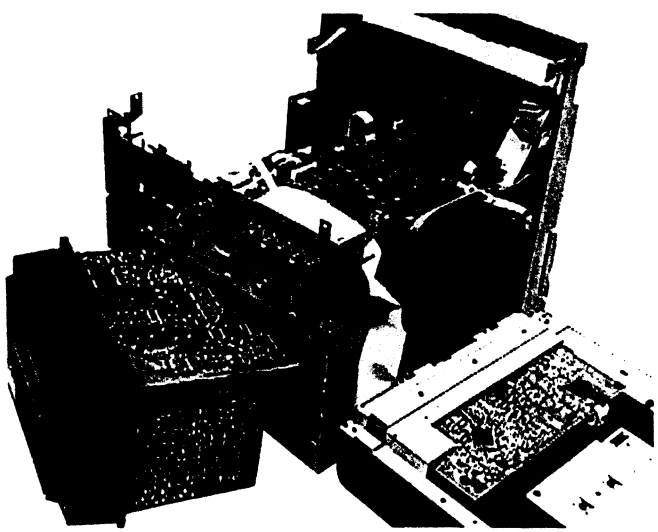


Picture 2



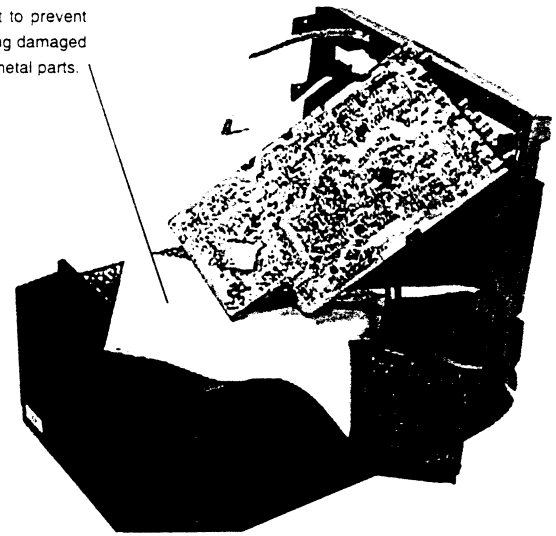
Picture 3

Service pos A



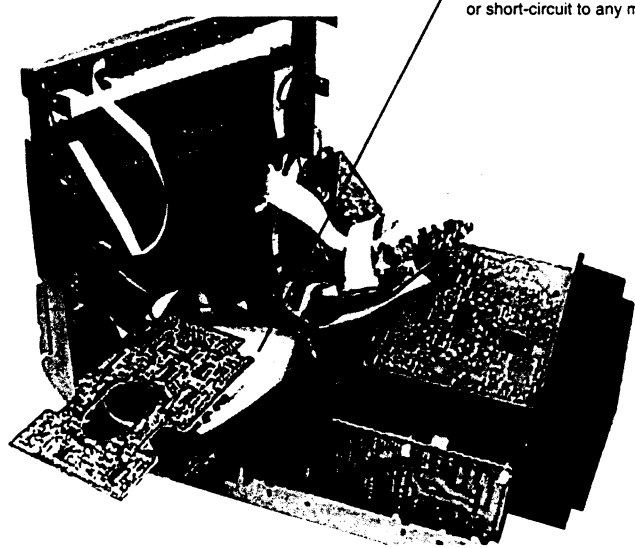
Service pos B

Use a insulation sheet to prevent the AF board from being damaged or short-circuit to any metal parts.



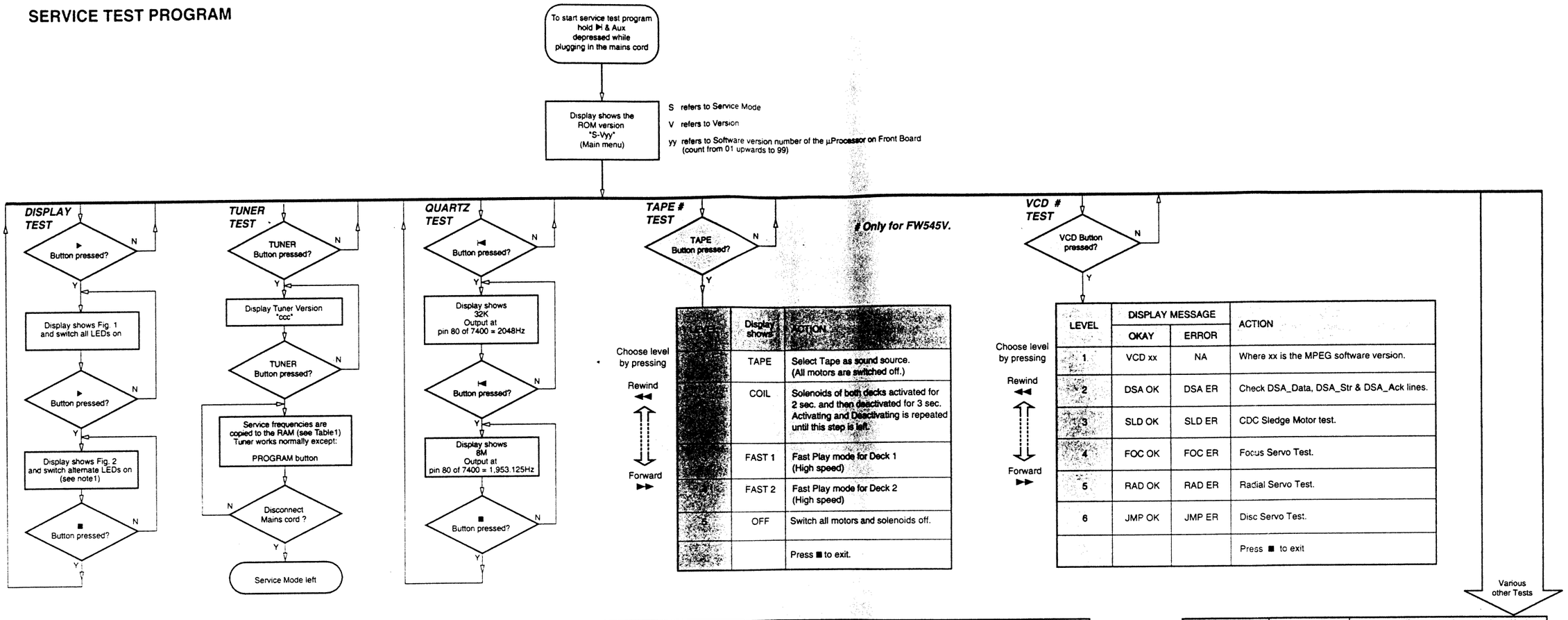
Service pos C

Use a insulation sheet to prevent the ETF board from being damaged or short-circuit to any metal parts.



3-4

SERVICE TEST PROGRAM



PRESET	Europe "EUR"	East Europe Extended-band "EAS"	East Europe "EAS"	USA "USA"	Oversea "OSE"
1	87.5MHz	65.81MHz	87.5MHz	87.5MHz	87.5MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz
3	531kHz	74MHz	531kHz	530kHz	531/530kHz
4	1602kHz	87.5MHz	1602kHz	1700kHz	1602/1700kHz
5	558kHz	531kHz	558kHz	560kHz	558/560kHz
6	1494kHz	1602kHz	1494kHz	1500kHz	1494/1500kHz
7	153kHz	558kHz	87.5MHz	98MHz	87.5MHz
8	279kHz	1494kHz	87.5MHz	87.5MHz	87.5MHz
9	198kHz	98MHz	87.5MHz	87.5MHz	87.5MHz
10	98MHz	70.01MHz	87.5MHz	87.5MHz	87.5MHz
11	87.5MHz	65.81MHz	98MHz	87.5MHz	98MHz

Table 1

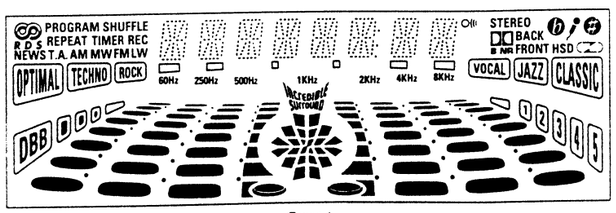
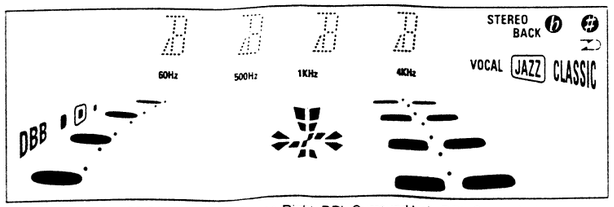


Figure 1

Keys activated	Display shows	Keys activated	Display shows	Keys activated	Display shows
No Key pressed	--	RDS *	10	◀◀	21
Any Remote control key	RC	DOLBY B *	11	▶▶	22
DISC CHANGE	1	JOG UP *	12	■ (Exit Test)	
OPEN / CLOSE	2	PROGRAM	13	▶II	24
CD1	3	CD	14	◀	25
CD2	4	TUNER	15	▶	26
CD3	5	TAPE	16	INCREDIBLE SURROUND *	27
STANDBY / ON	6	AUX	17	JOG DOWN *	28
CLOCK / TIMER	7	TAPE MODE *	18	DSC	29
DPL *	8	TAPE DUBBING *	19	DBB	30
NEWS *	9	RECORD *	20		

* Not for all type/version.

Table 2



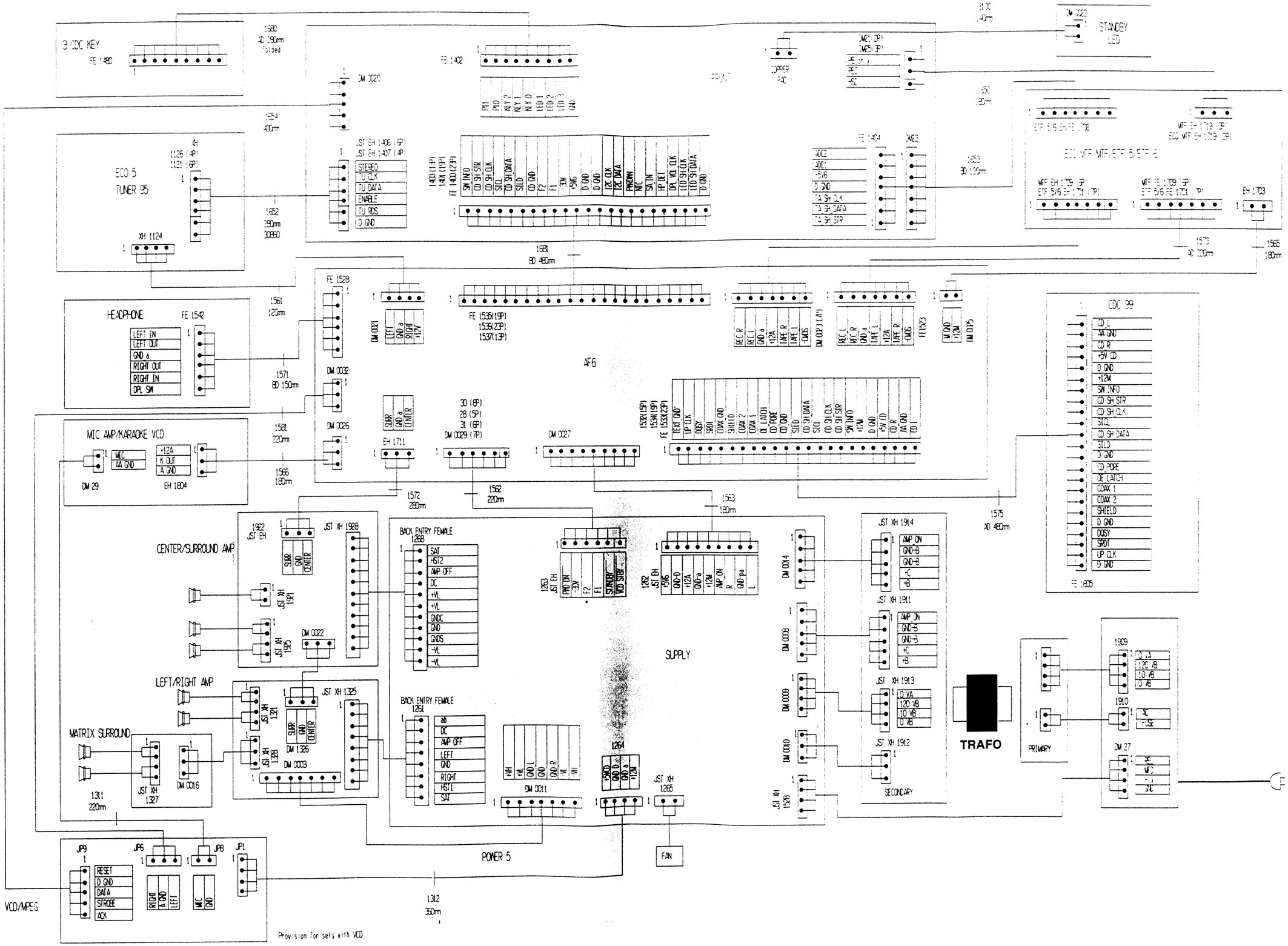
note1 : CDC1, CDC3, CD, Tape, Stereo Right, DPL Surround Left, DPL Centre Left.

Figure 2

TEST	Activated with	ACTION
EEPROM TEST	▶▶ ■ to Exit	A test pattern will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test pattern correctly, otherwise "ERROR" will be displayed.
EEPROM FORMAT TEST	◀◀	Load default data. Display shows "NEW" for 1 second. ***Caution!*** ***All presets from the customer will be lost!!***
KEY TEST	▶ ■ to Exit	Key numbers according table 2 are shown on the display.
FAST CLOCK TEST	CLOCK/TIMER	The clock is switched to fast mode. "FAST" is displayed for 1 sec. Press CLOCK/TIMER again to reset the clock to normal. "NORMAL" displayed for 1 sec.
ADC TEST	AUX ■ to Exit	The display shows "ADC1_ww". Press AUX to shows "ADC2_xx", "ADC3_yy" and "ADC4_zz" for an input signal between 0 and 5V, where "ww", "xx", "yy" and "zz" is the ADC value between 0 - 63 representing NTC, SA_1, SA_2 and SA_3 lines respectively. The set will go to standby when temperature is too high (NTC line ADC value is below 19).
VOLUME TEST	Rotary Volume Knob or Jog Shuttle	Display shows volume value for 2 seconds. Volume increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	

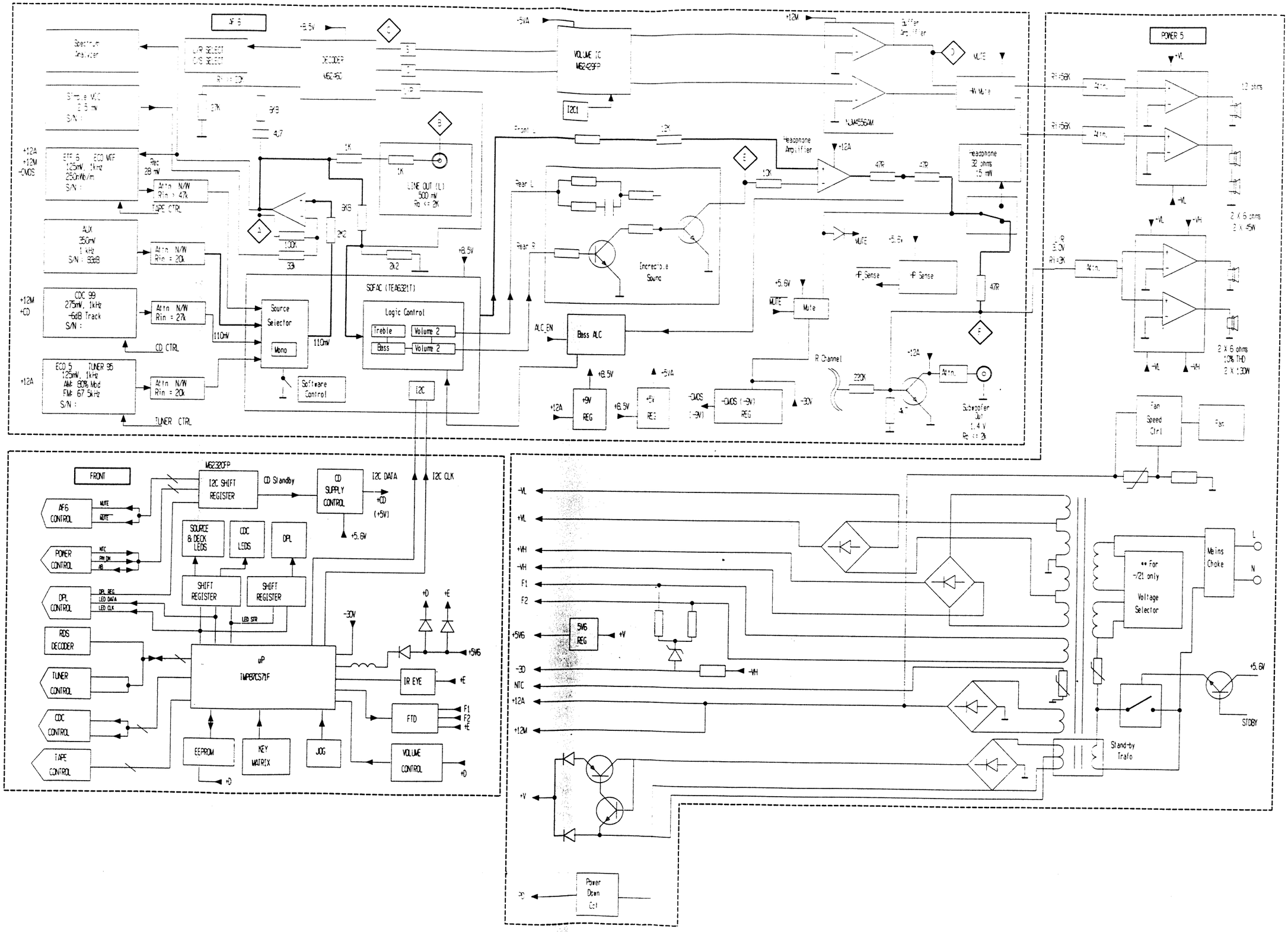
5-1

SET WIRING DIAGRAM



4-1

SET BLOCK DIAGRAM



FRONT BOARD

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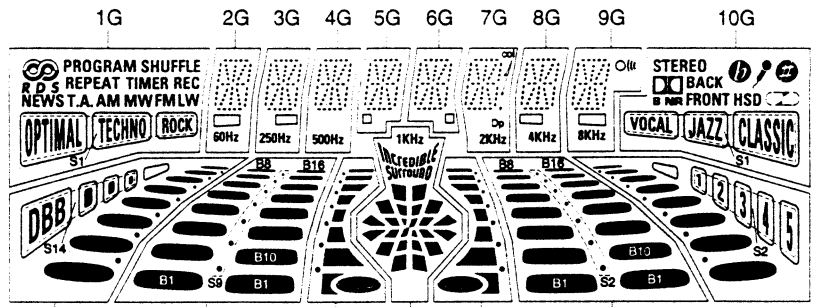
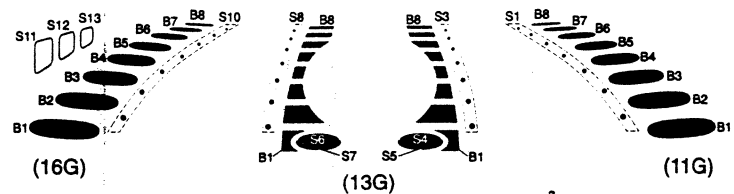
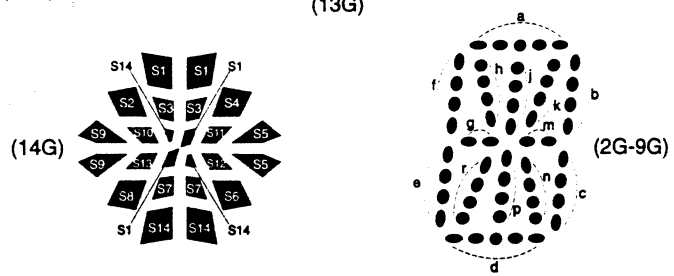
Electrical parts list 6-6

FTD DISPLAY PIN CONNECTIONS

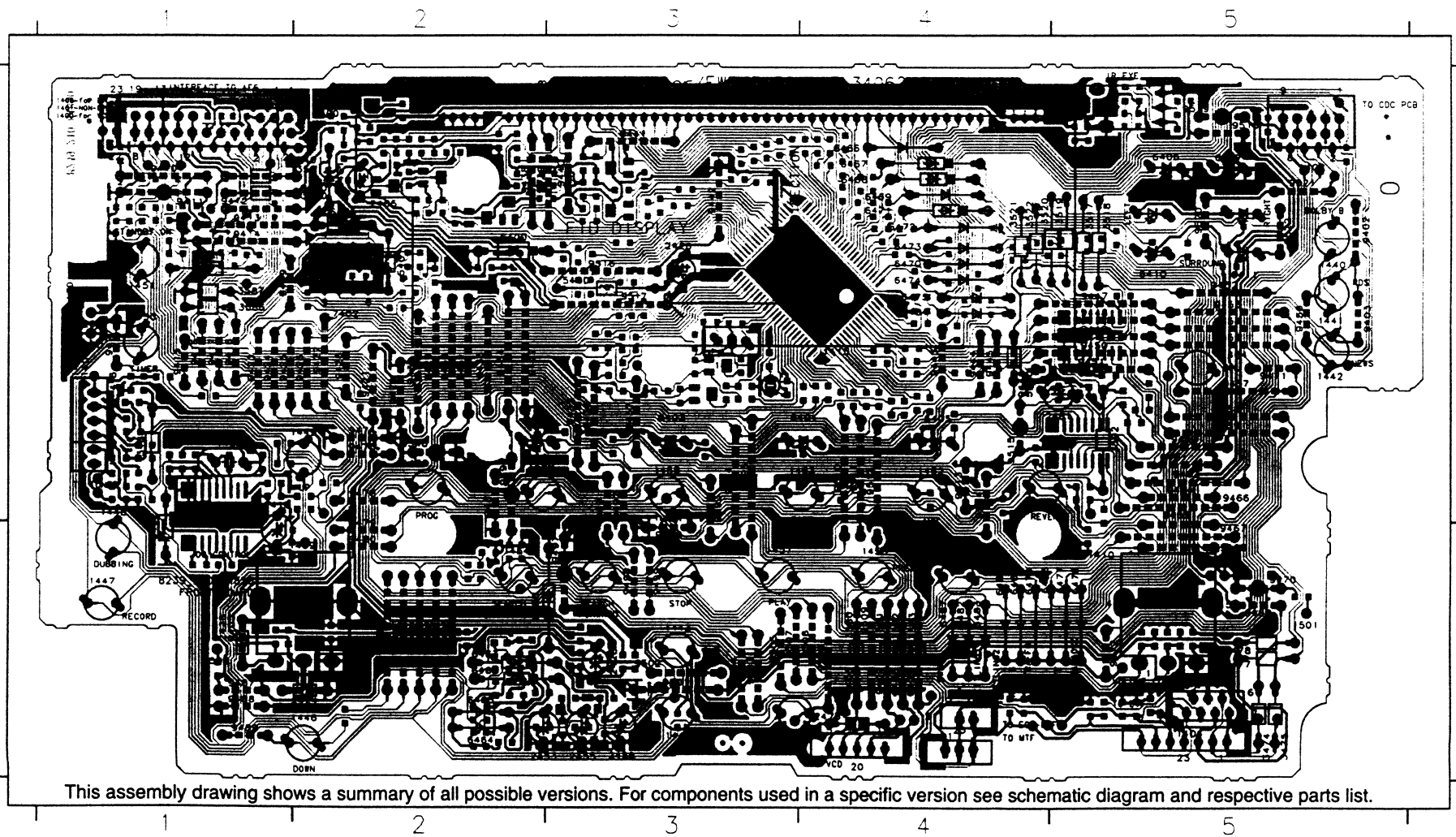






	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G	15G	16G
P1	RDS	a	a	a	a	a	a	a	a	STEREO	B1	B1	B1	S1	B1	B1
P2	NEWS	h	h	h	h	h	h	h	h		B2	B2	B2	S2	B2	B2
P3	T.A.	j,p	j,p	j,p	j,p	j,p	j,p	j,p	j,p	BACK	B3	B3	B3	S3	B3	B3
P4	PROGRAM	k	k	k	k	k	k	k	k	FRONT	B4	B4	B4	S4	B4	B4
P5	SHUFFLE	b	b	b	b	b	b	b	b		B5	B5	B5	S5	B5	B5
P6	REPEAT	f	f	f	f	f	f	f	f		B6	B6	B6	S6	B6	B6
P7	TIMER	m	m	m	m	m	m	m	m		B7	B7	B7	S7	B7	B7
P8	REC	g	g	g	g	g	g	g	g	HSD	B8	B8	B8	S8	B8	B8
P9	AM	c	c	c	c	c	c	c	c		S1	S2	S3	S9	S9	S10
P10	MW	e	e	e	e	e	e	e	e			B10	S8	S10	B10	
P11	FM	r	r	r	r	r	r	r	r		S2	B11	-	S11	B11	-
P12	LW	n	n	n	n	n	n	n	n	-		B12	-	S12	B12	
P13	S1	d	d	d	d	d	d	d	d	S1		B13	S7	S13	B13	S14
P14				-			col					B14	S6	S14	B14	S11
P15		60Hz	250Hz	500Hz	-	-	2KHz	4KHz	8KHz			B15	S4	1KHz	B15	S12
P16		-	-	-	-	-	Dp	-				B16	S5		B16	S13

FRONT BOARD - COMPONENT LAYOUT



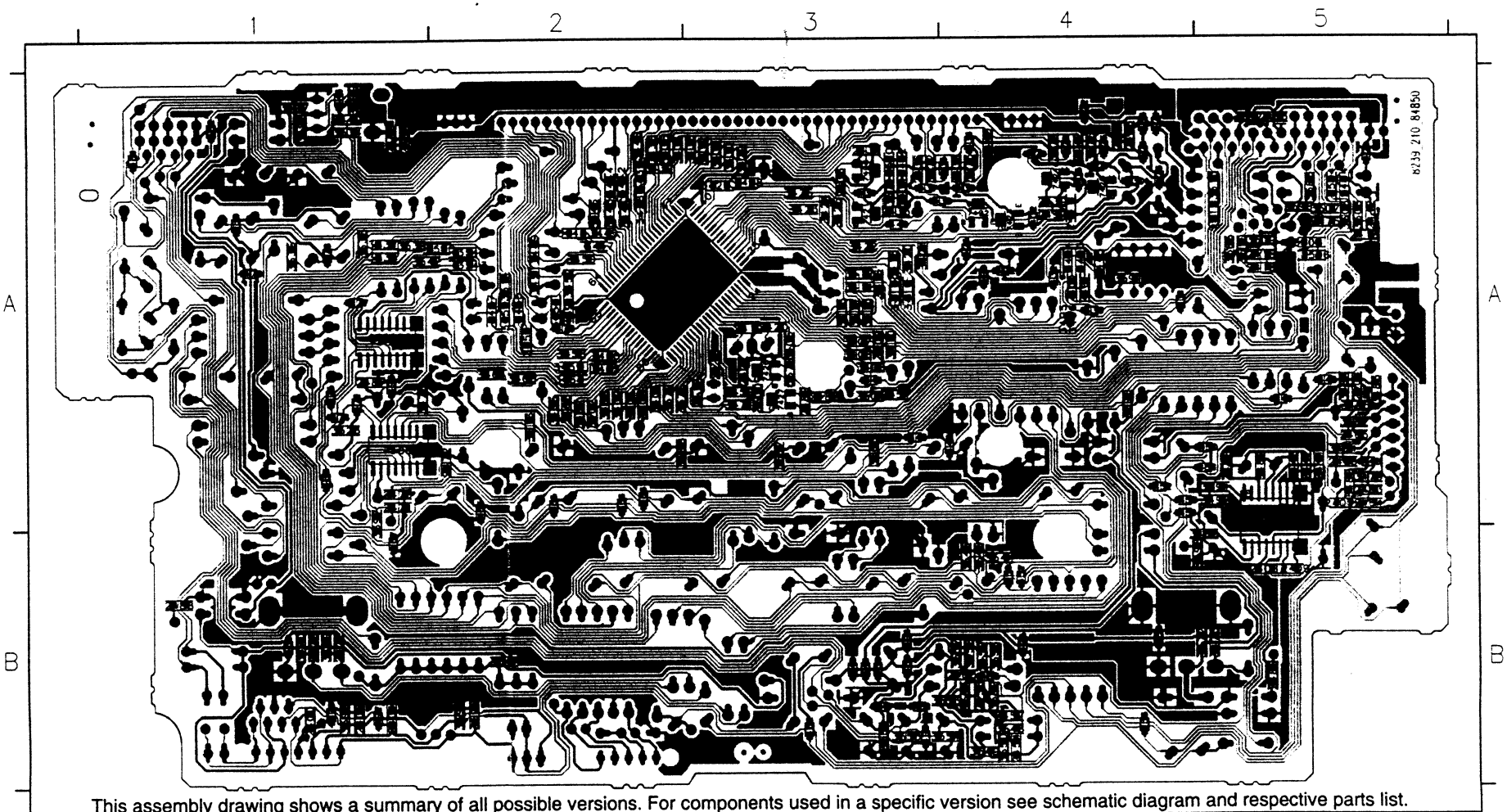
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

● - Solder pad on the component side are for grounding purpose (For double-sided pc board only).

6-2

FRONT BOARD - CHIP LAYOUT

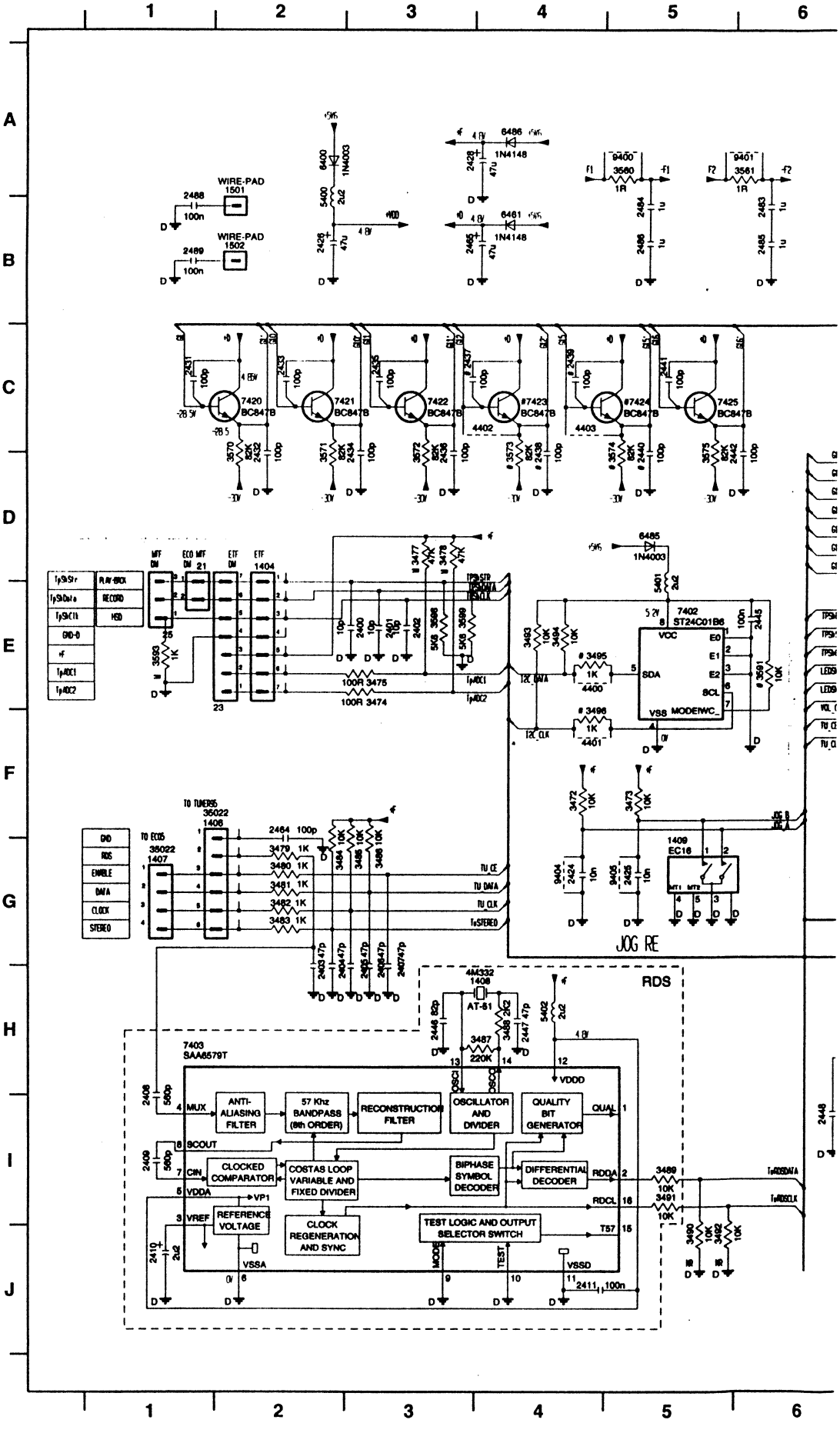
2400	B1	2418	A3	2442	A4	2470	A1	3404	A2	3421	A3	3438	A2	3455	A2	3472	B5	3494	A4	3513	A5	3547	B2	3571	A3	4400	A4	4433	A4	4450	A5	4467	B1	4492	A4	7427	A3
2401	B1	2419	A3	2445	A4	2471	A1	3405	A3	3422	A3	3439	A2	3456	A2	3473	B5	3495	A4	3514	A2	3548	B4	3572	A3	4401	A4	4434	A4	4451	A5	4468	A1	4493	B3		
2402	B1	2420	A3	2446	A5	2472	A2	3406	A3	3423	A3	3440	A2	3457	A2	3476	A1	3496	A4	3516	A2	3549	B4	3573	A4	4402	A4	4435	A4	4452	A4	4469	B1	4494	B3		
2403	A5	2421	A3	2447	A5	2475	A5	3407	A3	3424	A3	3441	A2	3458	A2	3479	A5	3497	A1	3523	A1	3550	B4	3574	A4	4403	A4	4436	A4	4453	A4	4471	A1	4495	B4		
2404	A5	2422	B1	2448	A1	2482	A3	3408	A3	3425	A3	3442	A2	3459	A2	3480	A5	3498	A1	3534	A1	3551	B4	3575	A4	4420	A5	4437	A3	4454	A4	4473	B1	4496	A1		
2405	A5	2423	B1	2449	A1	2483	A4	3409	A3	3426	A3	3443	A2	3460	A2	3481	A5	3499	A1	3535	A1	3552	B4	3576	A2	4421	A4	4438	A4	4455	B4	4474	A1	4497	B1		
2406	A5	2431	A3	2450	A3	2484	A1	3410	A3	3427	A3	3444	A2	3461	A2	3482	A5	3500	A3	3536	A1	3553	B4	3577	A2	4422	A4	4439	A3	4456	B4	4475	A1	7400	A2		
2407	A5	2432	A3	2451	A3	2485	A4	3411	A3	3428	A3	3445	A2	3462	A2	3483	A5	3501	A3	3537	A1	3554	B4	3578	A3	4423	A4	4440	A3	4457	B4	4476	A2	7403	A5		
2408	B5	2433	A3	2452	A3	2486	A1	3412	A3	3429	A3	3446	A2	3463	A2	3484	A5	3503	A5	3538	A1	3555	B3	3585	A5	4424	A4	4441	A3	4458	B4	4477	A1	7405	A1		
2409	B5	2434	A3	2454	B4	2487	A1	3413	A3	3430	A3	3447	A2	3464	A2	3485	A5	3504	A5	3539	A1	3556	B4	3590	A4	4425	A4	4442	A4	4459	B3	4478	A1	7406	A1		
2411	A5	2435	A3	2456	B4	2488	B1	3414	A3	3431	A3	3448	A2	3465	A2	3487	A5	3505	A5	3540	A2	3557	B4	3591	A4	4426	A4	4443	A3	4460	B3	4479	A1	7420	A3		
2412	A5	2436	A3	2457	B4	2489	B5	3415	A3	3432	A3	3449	A2	3466	A2	3488	A5	3506	A5	3541	A2	3558	B4	3593	B1	4427	A4	4444	B3	4461	B3	4480	A1	7421	A3		
2413	A5	2437	A4	2459	B4	3397	A1	3416	A3	3433	A3	3450	A2	3467	A2	3489	B5	3507	A5	3542	A1	3559	B3	3595	A5	4428	A4	4445	A5	4462	B3	4481	A1	7422	A4		
2414	A5	2438	A4	2460	B4	3400	A2	3417	A3	3434	A2	3451	A2	3468	A2	3490	B5	3508	A5	3543	A2	3566	A3	3596	A5	4429	A4	4446	A5	4463	A2	4482	A1	7423	A4		
2415	A5	2439	A4	2462	A2	3401	A2	3418	A3	3435	A2	3452	A2	3469	B1	3491	A5	3509	A5	3544	B4	3567	A3	3597	A5	4430	A4	4447	B3	4464	A2	4484	A4	7424	A4		
2416	A5	2440	A4	2463	A5	3402	A2	3419	A3	3436	A2	3453	A2	3470	B1	3492	A5	3510	A5	3545	B4	3568	A2	3598	B2	4431	A4	4448	A5	4465	A2	4485	B4	7425	A4		
2417	A3	2441	A4	2464	A5	3403	A2	3420	A3	3437	A2	3454	A2	3471	A3	3493	A4	3512	A5	3546	B4	3570	A3	3599	B2	4432	A4	4449	B3	4466	A2	4490	A4	7426	A3		



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

FRONT BOARD - CIRCUIT DIAGRAM

20 A20	1402 G20	1411 F9	1445 A14	1453 B14	1461 C15	2402 E3	2410 J1	2418 G9	2426 B2	2437 C3	2447 H4	2455 F13	2464 F2	2482
21 D1	1403 D19	1412 F9	1446 B15	1454 B14	1462 C14	2403 H2	2411 J4	2419 G9	2428 A3	2438 D4	2448 I6	2456 F14	2465 B3	2483
23 E1	1404 D2	1415 B11	1447 B14	1455 C15	1463 C14	2404 H2	2412 B17	2420 G9	2431 C1	2439 C4	2449 I7	2457 F14	2470 J9	2484
25 E1	1406 F1	1440 A15	1448 B14	1456 C14	1464 D15	2405 H3	2413 B17	2421 G10	2432 D2	2440 D5	2450 H9	2458 G13	2471 J10	2485
0100 H13	1407 G1	1441 A14	1449 B15	1457 C14	1501 A2	2406 H3	2414 B17	2422 G12	2433 C2	2441 C5	2451 H8	2459 G14	2472 J10	2486
0200 H12	1408 H4	1442 A14	1450 B14	1458 C15	1502 B2	2407 H3	2415 C17	2423 G12	2434 D3	2442 D5	2452 I8	2460 G14	2473 A20	2487
1400 D18	1409 G5	1443 A15	1451 B14	1459 C14	2400 E3	2408 I1	2416 C17	2424 G4	2435 C3	2445 E6	2453 E13	2462 D12	2475 B17	2488
1401 D18	1410 G11	1444 A14	1452 B15	1460 C14	2401 E3	2409 I1	2417 G9	2425 G5	2436 D3	2446 H3	2454 E14	2463 B18	2481 H14	2489



6-3

2426 B2 2437 C3 2447 H4 2455 F13 2464 F2 2482 G10 3397 H10 3407 F8 3415 F7 3423 D7 3431 C8 3439 C9 3447 C10 3455 D11 3463 E11 3471 G11 3479 G2 3487 H4 3495 E4 3504 A18 3512 D18 3521 J16 3539 C15 3547 E15 3555 F14 3567 I12 3576 F10 3586 D17 3597 C17 5401 E5 6406 I16 6463 G14 6471 B16 6479 B13 6487 D13 7421 C2 9401 A6 9409 B20
2428 A3 2436 D4 2448 I6 2456 F14 2465 B3 2483 B6 3400 F11 3408 F8 3416 F7 3424 D7 3432 C8 3440 C9 3448 C10 3456 D11 3464 E11 3472 F4 3480 G2 3488 H4 3496 F4 3505 A18 3513 D18 3522 I16 3540 C15 3548 E15 3556 G15 3568 I12 3577 F10 3587 D17 3598 E3 5402 H4 6407 I16 6464 E14 6472 C16 6480 B13 7400 C11 7422 C3 9402 A14 9446 H17
2431 C1 2439 C4 2449 I7 2457 F14 2476 J9 2484 B6 3401 F10 3409 F8 3417 E7 3425 D7 3433 C8 3441 C9 3449 C10 3457 D11 3465 E11 3473 F5 3481 G2 3489 I5 3497 H7 3506 B17 3514 G20 3523 H13 3541 C15 3549 E14 3557 G14 3569 C2 3578 C5 3588 E16 3599 E3 5410 H17 6408 I17 6465 E14 6473 C16 6481 B13 7402 E5 7423 C4 9403 A14
2432 D2 2440 D5 2450 H8 2458 G13 2471 J10 2485 B6 3402 F10 3410 F8 3418 E7 3426 D7 3434 C8 3442 C9 3450 C10 3458 D11 3466 E11 3474 E3 3482 G2 3490 J5 3498 H7 3507 B18 3516 I12 3534 A15 3542 D15 3550 E14 3558 G14 3571 C2 3579 C6 3589 E16 3600 A2 6409 I17 6466 A16 6474 D16 6482 A13 7403 H1 7424 C5 9404 G4
2433 C2 2441 C5 2451 H8 2459 G14 2472 J10 2486 B5 3403 F10 3411 F7 3419 E7 3427 D7 3435 C8 3443 C9 3451 C11 3459 D11 3467 F11 3475 E3 3483 G2 3491 I5 3499 H7 3508 B17 3517 I16 3535 A15 3543 D15 3551 E13 3559 G14 3572 C3 3581 A20 3592 H10 4401 F4 6402 J12 6410 J17 6467 A16 6475 D16 6483 A13 7404 H6 7425 C5 9405 G5
2434 D3 2442 D6 2452 I8 2460 G14 2473 A20 2487 H11 3404 F10 3412 F8 3420 E7 3428 D7 3436 C8 3444 C10 3452 C11 3460 E11 3468 F12 3476 H13 3484 G2 3492 J5 3500 H8 3509 C18 3518 I16 3536 A15 3544 E16 3552 F15 3560 A5 3573 C4 3582 B20 3593 E1 4402 C4 6403 I12 6411 H17 6468 A16 6476 D13 6484 G19 7405 H11 7426 G10 9406 A20
2435 C3 2445 E8 2453 E13 2462 D12 2475 B17 2488 B1 3405 F8 3413 F7 3421 E7 3429 C7 3437 C9 3445 C10 3453 D11 3461 E11 3469 F12 3477 D3 3486 G3 3493 E4 3502 I8 3510 C18 3519 I16 3537 B15 3545 E16 3553 F14 3561 A6 3574 C5 3583 D17 3594 B16 4403 C4 6404 I12 6461 B4 6469 B16 6477 C13 6485 D6 7406 H15 7427 H8 9407 A20
2436 D3 2446 H3 2454 E14 2463 B18 2481 H14 2489 B1 3406 F8 3414 F7 3422 D7 3430 C8 3438 C9 3446 C10 3454 D11 3462 E11 3470 G12 3478 D3 3486 G3 3494 E4 3503 A18 3511 C17 3520 I16 3538 B15 3546 E15 3554 F14 3566 J12 3575 C5 3585 D17 3596 B16 5400 B2 6405 I12 6462 F14 6470 C16 6478 C13 6486 A4 7420 C2 9400 A5 9408 B20

4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

A B C D E F G H I J

JOG RE

VOL RE

RDS

CW00

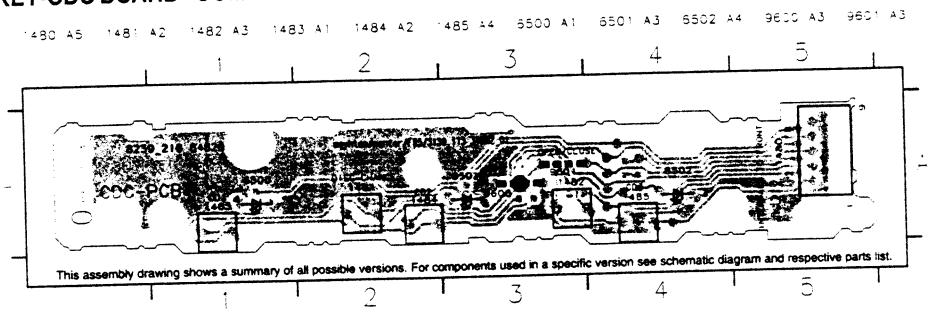
Set Power	Setting2	Setting1
20W	0	0
40W,50W	0	1
70W,80W, 100W,120W	1	0

ITEM NO	FUNCTION	Colour
6402	CD SELECT	Red
6403	TAPE SELECT	Red
6404	TUNER SELECT	Red
6405	AUX SELECT	Red
6406	CENTER LEFT	Amber
6407	CENTER RIGHT	Amber
6408	STEREO LEFT	Amber
6409	STEREO RIGHT	Amber
6410	SURROUND LEFT	Amber
6411	SURROUND RIGHT	Amber

NT : NON NTC .
NR : NON RDS ONLY
ND : NON DPL ONLY .
M : MFF ONLY.
: PROVISION ONLY .

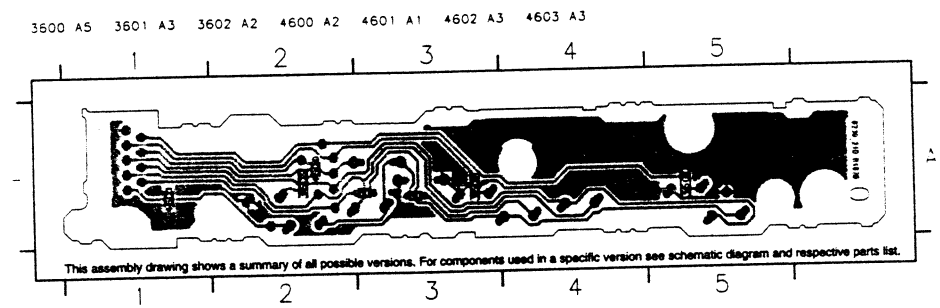
Note : Some values may varies, see respective parts list for correct value.

KEY-CDC BOARD - COMPONENT LAYOUT


1480 A5 1481 A2 1482 A3 1483 A1 1484 A2 1485 A4 6500 A1 6501 A3 6502 A4 9600 A3 9601 A3
CDC-PCB
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

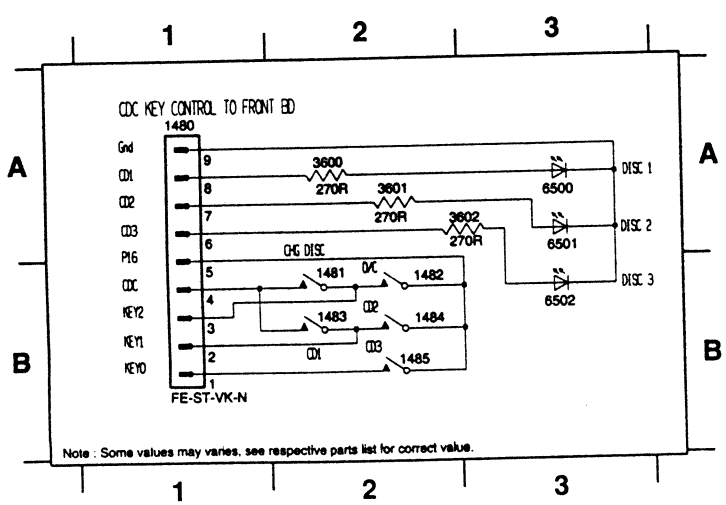
● - Solder pad on the component side are for grounding purpose (For double-sided pc board only).

KEY-CDC BOARD - CHIP LAYOUT

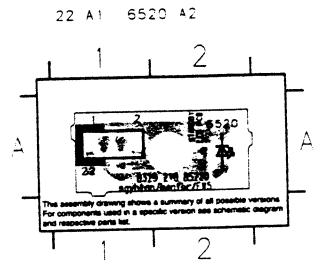

3600 A5 3601 A3 3602 A2 4600 A2 4601 A1 4602 A3 4603 A3
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

KEY-CDC PART - CIRCUIT DIAGRAM

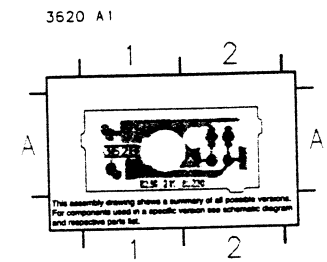
1480 A1 1482 B2 1484 B2 3600 A2 3602 A3 6501 A3
1481 B2 1483 B2 1485 B2 3601 A2 6500 A3 6502 B3



STANDBY LED BOARD - COMPONENT LAYOUT

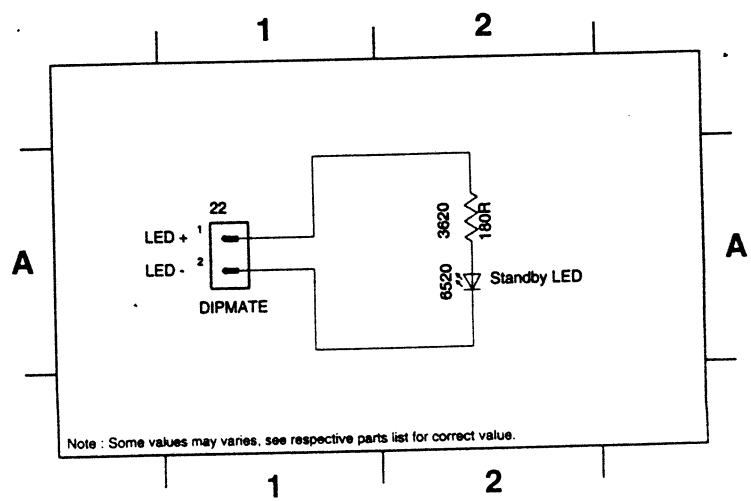

22 A1 6520 A2
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

STANDBY LED BOARD - CHIP LAYOUT

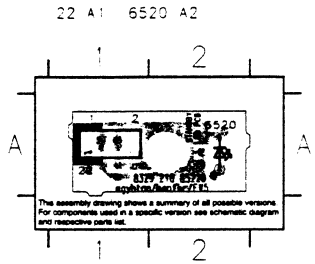

3620 A1
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

STANDBY LED PART - CIRCUIT DIAGRAM

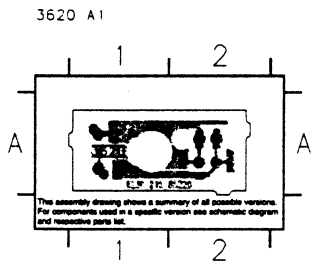
22 A1 3620 A2 6520 A2



STANDBY LED BOARD - COMPONENT LAYOUT

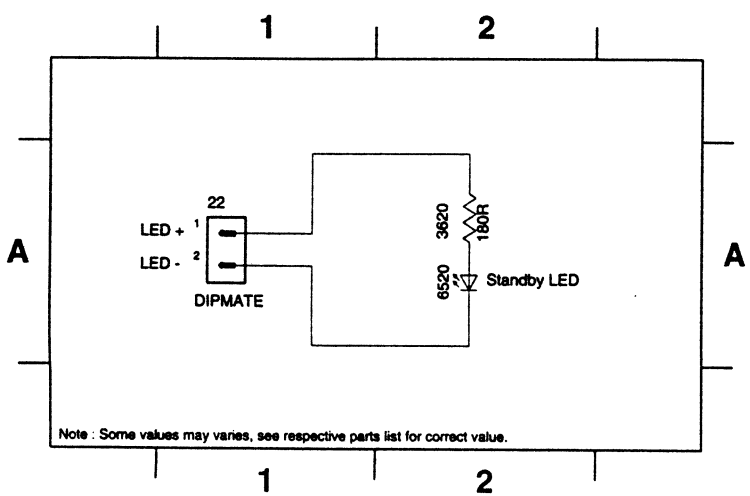


STANDBY LED BOARD - CHIP LAYOUT

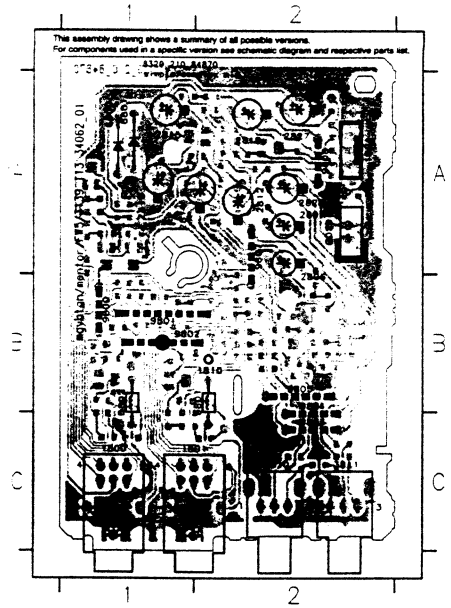


STANDBY LED PART - CIRCUIT DIAGRAM

22 A1 3620 A2 6520 A2

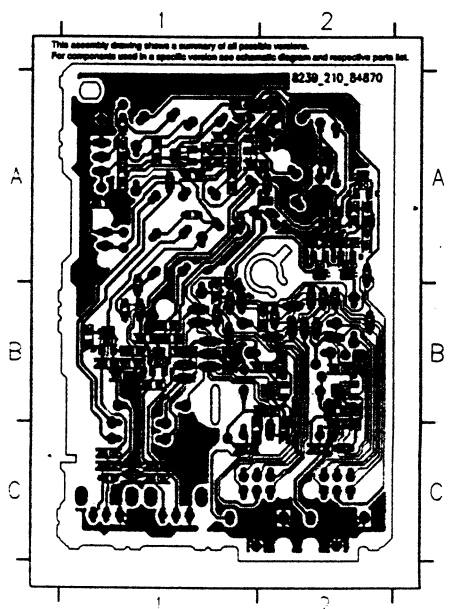


KARAOKE BOARD - COMPONENT LAYOUT



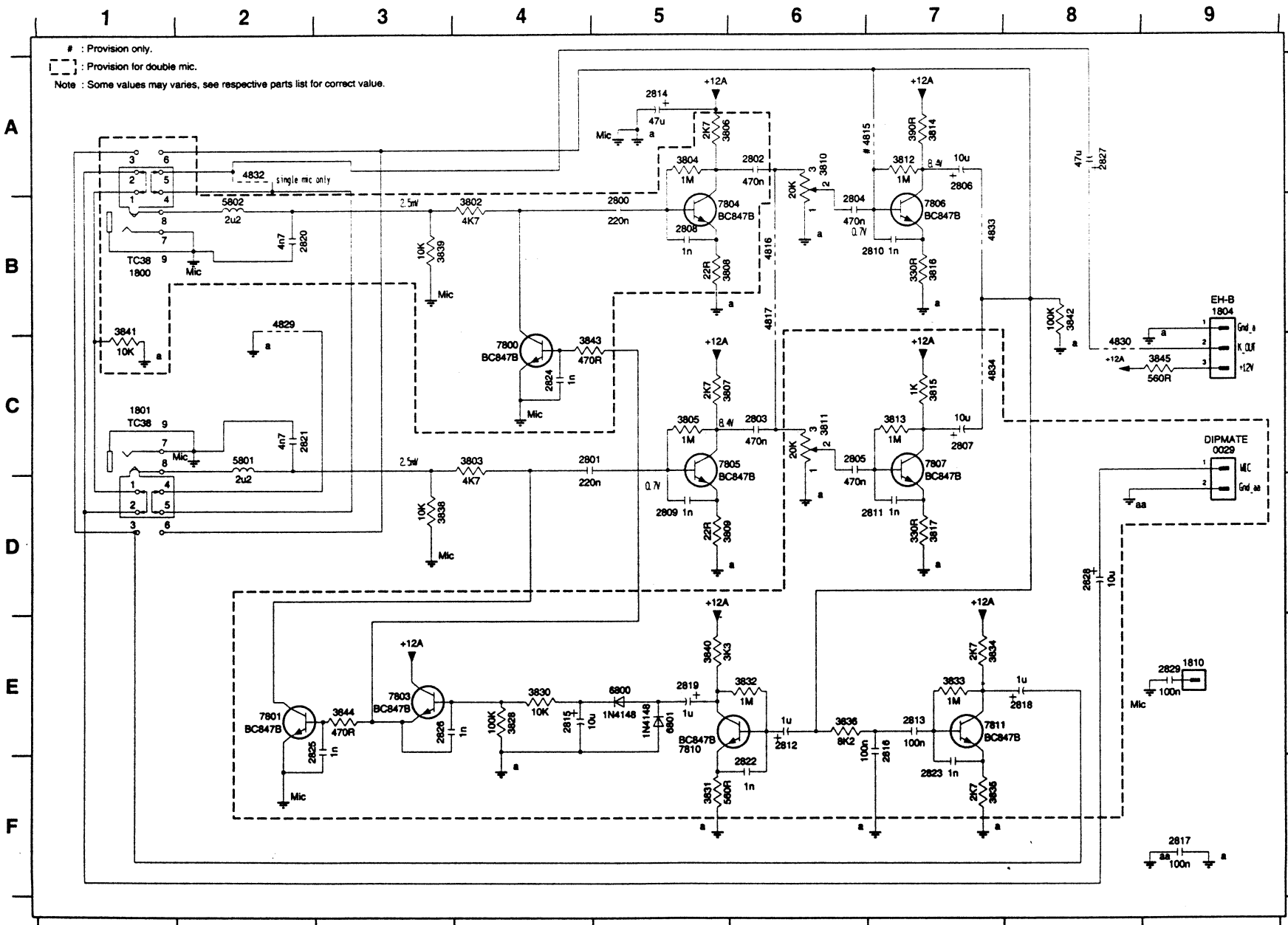
● - Solder pad on the component side are for grounding purpose (For double-sided pc board only).

KARAOKE BOARD - CHIP LAYOUT



6-5

KARAOKE PART - CIRCUIT DIAGRAM



0029 C9
1800 B1
1801 C1
1804 B9
1810 E9
2800 B5
2801 C4
2802 A6
2803 C6
2804 B6
2805 C6
2806 A7
2807 C7
2808 B5
2809 D5
2810 B7
2811 D7
2812 E6
2813 E7
2814 A5
2815 E4
2816 E7
2817 F9
2818 E8
2819 E5
2820 B2
2821 C2
2822 F6
2823 F7
2824 C4
2825 E2
2826 E3
2827 A8
2828 D8
2829 E9
3802 B4
3803 C4
3804 A5
3805 C5
3806 A5
3807 C5
3808 B5
3809 D5
3810 A6
3811 C6
3812 A7
3813 C7
3814 A7
3815 C7
3816 B7
3817 D7
3828 E4
3830 E4
3831 F5
3832 E6
3833 E7
3834 E7
3835 F7
3836 E6
3838 D3
3839 B3
3840 E5
3841 B1
3842 B8
3843 C4
3844 E3
3845 C9
4815 A7
4816 B6
4817 B6
4829 B2
4830 C8
4832 A2
4833 B7
4834 C7
5801 C2
5802 B2
6800 E5
6801 E5
7800 C4
7801 E2
7803 E3
7804 B5
7805 C5
7806 B7
7807 C7
7810 E5
7811 E7

MISCELLANEOUS

1401	4822 265 11545	Flex Connector 19P
1402	4822 265 11531	Flex Connector 9P
1404	4822 267 10953	Flex Connector 7P
1408	4822 242 72195	QUARZ 4,332MHz
1409	4822 273 10366	Rotary Encoder 24P
1410	4822 273 10365	Rotary Encoder 24P
1411	4822 242 72066	Ceramic Resonator
1412	4822 242 70938	X'tal Resonator 32,768kHz
1415	4822 135 00266	FTD Display
1440	4822 276 13775	Tact Switch
1441	4822 276 13775	Tact Switch
1442	4822 276 13775	Tact Switch
1443	4822 276 13775	Tact Switch
1444	4822 276 13775	Tact Switch
1445	4822 276 13775	Tact Switch
1447	4822 276 13775	Tact Switch
1448	4822 276 13775	Tact Switch
1450	4822 276 13775	Tact Switch
1451	4822 276 13775	Tact Switch
1452	4822 276 13775	Tact Switch
1453	4822 276 13775	Tact Switch
1454	4822 276 13775	Tact Switch
1455	4822 276 13775	Tact Switch
1456	4822 276 13775	Tact Switch
1457	4822 276 13775	Tact Switch
1458	4822 276 13775	Tact Switch
1459	4822 276 13775	Tact Switch
1460	4822 276 13775	Tact Switch
1461	4822 276 13775	Tact Switch
1462	4822 276 13775	Tact Switch
1463	4822 276 13775	Tact Switch
1480	4822 265 11531	Flex Connector 9P
1481	4822 276 13775	Tact Switch
1482	4822 276 13775	Tact Switch
1483	4822 276 13775	Tact Switch
1484	4822 276 13775	Tact Switch
1485	4822 276 13775	Tact Switch
1801	4822 265 11529	Headphone Socket

CAPACITORS

2400	5322 122 32448	10pF 5% 63V
2401	5322 122 32448	10pF 5% 63V
2402	5322 122 32448	10pF 5% 63V
2403	4822 126 13692	47pF 1% 63V
2404	4822 126 13692	47pF 1% 63V
2405	4822 126 13692	47pF 1% 63V
2406	4822 126 13692	47pF 1% 63V
2407	4822 126 13692	47pF 1% 63V
2408	4822 122 33173	560pF 10% 50V
2409	4822 122 33173	560pF 10% 50V
2410	4822 124 41576	2,2µF 20% 50V
2411	4822 126 13196	100nF 10% 25V
2412	4822 126 13692	47pF 1% 63V
2413	4822 126 13692	47pF 1% 63V
2414	4822 126 13692	47pF 1% 63V
2415	5322 122 32448	10pF 5% 63V
2416	5322 122 32448	10pF 5% 63V
2417	4822 126 13486	15pF 2% 63V
2418	4822 126 13486	15pF 2% 63V
2419	5322 122 32659	33pF 5% 50V
2420	5322 122 32659	33pF 5% 50V
2421	4822 126 13694	68pF 1% 63V
2422	4822 122 33177	10nF 20% 50V
2423	4822 122 33177	10nF 20% 50V
2424	4822 121 51387	10nF 20% 16V
2425	4822 121 51387	10nF 20% 16V
2426	4822 124 80483	47µF 20% 6,3V
2428	4822 124 80483	47µF 20% 6,3V
2431	5322 122 32531	100pF 5% 50V
2432	5322 122 32531	100pF 5% 50V
2433	5322 122 32531	100pF 5% 50V
2434	5322 122 32531	100pF 5% 50V
2435	5322 122 32531	100pF 5% 50V
2436	5322 122 32531	100pF 5% 50V
2441	5322 122 32531	100pF 5% 50V
2442	5322 122 32531	100pF 5% 50V
2445	4822 126 13196	100nF 10% 25V
2446	4822 126 13695	82pF 1% 63V
2447	4822 126 13692	47pF 1% 63V
2448	4822 126 13751	47nF 10% 63V
2449	4822 122 33175	2,2nF 20% 50V
2450	4822 122 33808	10nF 20% 50V
2451	4822 126 13196	100nF 10% 25V
2452	4822 122 33808	10nF 20% 50V
2453	4822 126 13581	0,22µF 20% 50V
2454	5322 126 10184	820pF 5% 50V
2455	4822 126 13581	0,22µF 20% 50V
2456	5322 122 31866	6,8nF 10% 63V
2457	4822 126 13196	100nF 10% 25V
2458	4822 124 40746	0,22µF 20% 63V
2459	4822 126 13751	47nF 10% 63V
2460	4822 126 13836	1µF 16V
2462	4822 126 14118	100nF +80/-20% 50V
2463	4822 126 13196	100nF 10% 25V
2464	5322 122 32531	100pF 5% 50V
2465	4822 124 80483	47µF 20% 6,3V
2470	4822 122 33575	220pF 5% 63V
2471	4822 122 33575	220pF 5% 63V
2472	4822 122 33575	220pF 5% 63V
2481	4822 124 80483	47µF 20% 6,3V
2483	4822 126 13836	1µF 16V
2484	4822 126 13836	1µF 16V
2485	4822 126 13836	1µF 16V
2486	4822 126 13836	1µF 16V
2487	4822 126 13196	100nF 10% 25V
2488	4822 126 10002	100nF 20% 25V
2489	4822 126 10002	100nF 20% 25V
2801	4822 126 13061	220nF 20% 25V
2803	4822 126 13482	470nF +80/-20% 16V
2804	4822 126 13482	470nF +80/-20% 16V
2806	4822 124 41579	10µF 20% 50V
2809	5322 122 34123	1nF 10% 50V
2810	5322 122 34123	1nF 10% 50V
2814	4822 124 40433	47µF 20% 25V
2817	4822 126 13196	100nF 10% 25V
2821	5322 126 10223	4,7nF 10% 63V
2827	4822 124 41579	10µF 20% 50V
2829	4822 126 10002	100nF 20% 25V

RESISTORS

3397	4822 051 20331	330R 5% 0,1W
3400	4822 051 10102	1k 2% 0,25W
3401	4822 117 10833	10k 1% 0,1W
3402	4822 051 10102	1k 2% 0,25W
3403	4822 117 10833	10k 1% 0,1W
3404	4822 051 20182	1k8 5% 0,1W
3405	4822 117 10833	10k 1% 0,1W
3406	4822 051 10102	1k 2% 0,25W
3407	4822 051 10102	1k 2% 0,25W
3408	4822 117 10833	10k 1% 0,1W
3409	4822 051 20471	470R 5% 0,1W
3410	4822 051 10102	1k 2% 0,25W
3411	4822 051 10102	1k 2% 0,25W
3412	4822 051 10102	1k 2% 0,25W
3413	4822 051 10102	1k 2% 0,25W
3414	4822 051 10102	1k 2% 0,25W
3415	4822 051 10102	1k 2% 0,25W
3416	4822 117 11449	2k2 1% 0,1W
3417	4822 051 20471	470R 5% 0,1W
3418	4822 051 20471	470R 5% 0,1W
3419	4822 051 10102	1k 2% 0,25W
3420	4822 051 10102	1k 2% 0,25W
3421	4822 051 10102	1k 2% 0,25W
3422	4822 051 10102	1k 2% 0,25W
3423	4822 051 20101	100R 5% 0,1W
3424	4822 051 20101	100R 5% 0,1W
3425	4822 051 20101	100R 5% 0,1W
3426	4822 051 20101	100R 5% 0,1W
3427	4822 051 10102	1k 2% 0,25W
3428	4822 051 10102	1k 2% 0,25W
3429	4822 051 20101	100R 5% 0,1W
3430	4822 051 20101	100R 5% 0,1W
3431	4822 051 20101	100R 5% 0,1W
3432	4822 051 20101	100R 5% 0,1W
3433	4822 051 20101	100R 5% 0,1W
3434	4822 051 20101	100R 5% 0,1W
3435	4822 051 20101	100R 5% 0,1W
3436	4822 051 20101	100R 5% 0,1W
3437	4822 051 10102	1k 2% 0,25W
3438	4822 051 10102	1k 2% 0,25W
3439	4822 051 10102	1k 2% 0,25W
3440	4822 051 10102	1k 2% 0,25W
3441	4822 051 10102	1k 2% 0,25W
3442	4822 051 10102	1k 2% 0,25W
3443	4822 051 10102	1k 2% 0,25W
3444	4822 051 10102	1k 2% 0,25W
3445	4822 051 10102	1k 2% 0,25W
3446	4822 051 10102	1k 2% 0,25W
3447	4822 051 10102	1k 2% 0,25W
3448	4822 051 10102	1k 2% 0,25W
3449	4822 051 10102	1k 2% 0,25W
3450	4822 051 10102	1k 2% 0,25W
3451	4822 051 10102	1k 2% 0,25W
3452	4822 051 10102	1k 2% 0,25W
3453	4822 051 10102	1k 2% 0,25W
3454	4822 051 10102	1k 2% 0,25W
3455	4822 051 10102	1k 2% 0,25W
3456	4822 051 10102	1k 2% 0,25W
3457	4822 051 10102	1k 2% 0,25W
3458	4822 051 10102	1k 2% 0,25W
3459	4822 051 10102	1k 2% 0,25W
3460	4822 051 10102	1k 2% 0,25W
3461	4822 051 10102	1k 2% 0,25W
3462	4822 051 10102	1k 2% 0,25W
3463	4822 051 10102	1k 2% 0,25W
3464	4822 051 10102	1k 2% 0,25W
3465	4822 051 10102	1k 2% 0,25W
3466	4822 051 10102	1k 2% 0,25W
3467	4822 051 10102	1k 2% 0,25W
3468	4822 051 20105	1M 5% 0,1W
3469	4822 117 10833	10k 1% 0,1W
3470	4822 117 10833	10k 1% 0,1W
3471	4822 117 11449	2k2 1% 0,1W
3472	4822 117 10833	10k 1% 0,1W
3473	4822 117 10833	10k 1% 0,1W
3474	4822 116 52175	100R 5% 0,5W
3475	4822 116 52175	100R 5% 0,5W
3476	4822 117 10834	47k 1% 0,1W
3479	4822 051 10102	1k 2% 0,25W
3480	4822 051 10102	1k 2% 0,25W
3481	4822 051 10102	1k 2% 0,25W
3482	4822 051 10102	1k 2% 0,25W
3483	4822 051 10102	1k 2% 0,25W
3484	4822 117 10833	10k 1% 0,1W
3485	4822 117 10833	10k 1% 0,1W
3486	4822 116 83864	10k 5% 0,5W
3487	4822 117 13579	220k 1% 0,1W
3488	4822 117 11449	2k2 1% 0,1W

RESISTORS

3489	4822 117 10833	10k 1% 0,1W
3491	4822 117 10833	10k 1% 0,1W
3493	4822 117 10833	10k 1% 0,1W
3494	4822 117 10833	10k 1% 0,1W
3497	4822 051 20101	100R 5% 0,1W
3498	4822 117 10833	10k 1% 0,1W
3499	4822 051 10102	1k 2% 0,25W
3500	4822 051 10102	1k 2% 0,25W
3501	4822 051 20104	100k 5% 0,1W
3503	4822 051 10102	1k 2% 0,25W
3504	4822 051 20471	470R 5% 0,1W
3505	4822 051 20471	470R 5% 0,1W
3506	4822 051 20182	1k8 5% 0,1W
3507	4822 051 20471	470R 5% 0,1W
3508	4822 051 20182	1k8 5% 0,1W
3509	4822 117 11503	220R 1% 0,1W
3510	4822 117 11503	220R 1% 0,1W
3511	4822 116 52298	680k 5% 0,5W
3514	4822 051 20331	330R 5% 0,1W
3516	4822 117 11503	220R 1% 0,1W
3523	4822 117 10833	10k 1% 0,1W
3534	4822 051 20331	330R 5% 0,1W
3535	4822 051 20331	330R 5% 0,1W
3536	4822 051 20331	330R 5% 0,1W
3537	4822 051 20331	330R 5% 0,1W
3538	4822 051 20331	330R 5% 0,1W
3539	4822 051 20331	330R 5% 0,1W
3540	4822 051 20331	330R 5% 0,1W
3541	4822 051 20331	330R 5% 0,1W
3542	4822 051 20331	330R 5% 0,1W
3543	4822 051 20331	330R 5% 0,1W
3544	4822 051 20474	470k 5% 0,1W
3545	4822 051 20474	470k 5% 0,1W
3546	4822 051 20474	470k 5% 0,1W
3547	4822 051 20474	470k 5% 0,1W
3548	4822 117 11139	1k5 1% 0,1W
3549	4822 051 20684	680k 5% 0,1W
3550	4822 117 10834	47k 1% 0,1W
3551	4822 051 20474	470k 5% 0,1W
3552	4822 117 11139	1k5 1% 0,1W
3553	4822 051 20684	680k 5% 0,1W
3554	4822 117 10834	47k 1% 0,1W
3555	4822 051 20474	470k 5% 0,1W
3556	4822 117 11139	1k5 1% 0,1W
3557	4822 051 20684	680k 5% 0,1W
3558	4822 117 10834	47k 1% 0,1W
3559	4822 051 20474	470k 5% 0,1W
3560	4822 116 80176	1R 5% 0,5W
3561	4822 116 80176	1R 5% 0,5W
3566	4822 117 11503	220R 1% 0,1W
3567	4822 117 11503	220R 1% 0,1W
3568	4822 117 11503	220R 1% 0,1W
3570	4822 117 11149	82k 1% 0,1W
3571	4822 117 11149	82k 1% 0,1W
3572	4822 117 11149	82k 1% 0,1W
3575	4822 117 11149	82k 1% 0,1W
3576	4822 051 10102	1k 2% 0,25W
3577	4822 051 20182	1k8 5% 0,1W
3578	4822 117 10833	10k 1% 0,1W
3585	4822 051 20105	1M 5% 0,1W
3586	4822 116 83884	47k 5% 0,5W
3587	4822 116 83884	47k 5% 0,5W
3592	4822 116 83864	10k 5% 0,5W
3595	4822 051 20182	1k8 5% 0,1W
3596	4822 051 20182	1k8 5% 0,1W
3600	4822 117 11504	270R 1% 0,1W
3601	4822 117 11504	270R 1% 0,1W
3602	4822 117 11504	270R 1% 0,1W
3620	4822 117 11503	220R 1% 0,1W
3803	4822 051 20472	4k7 5% 0,1W
3805	4822 051 20105	1M 5% 0,1W
3807	4822 117 12955	2k7 1% 0,1W
3809	4822 051 20229	22R 5% 0,1W
3810	4822 101 21204	20kA POTM
3812	4822 051 20105	1M 5% 0,1W
3814	4822 051 20391	390R 5% 0,1W
3816	4822 051 20331	330R 5% 0,1W
3838	4822 117 10833	10k 1% 0,1W
3842	4822 051 20104	100k 5% 0,1W
4400	4822 051 20008	0R Jumper 0805
4401	4822 051 20008	0R Jumper 0805
4402	4822 051 20008	0R Jumper 0805
4403	4822 051 20008	0R Jumper 0805
4420	4822 051 20008	0R Jumper 0805
4421	4822 051 20008	0R Jumper 0805
4422	4822 051 20008	0R Jumper 0805
4423	4822 051 20008	0R Jumper 0805
4424	4822 051 20008	0R Jumper 0805
4425	4822 051 20008	0R Jumper 0805
4426	4822 051 20008	0R Jumper 0805
4427	4822 051 20008	0R Jumper 0805
4428	4822 051 20008	0R Jumper 0805
4429	4822 051 20008	0R Jumper 0805
4430	4822 051 20008	0R Jumper 0805
4431	4822 051 20008	0R Jumper 0805
4432	4822 051 20008	0R Jumper 0805
4433	4822 051 20008	0R Jumper 0805
4434	4822 051 20008	0R Jumper 0805
4435	4822 051 20008	0R Jumper 0805
4436	4822 051 20008	0R Jumper 0805
4437	4822 051 20008	0R Jumper 0805
4438	4822 051 20008	0R Jumper 0805
4439	4822 051 20008	0R Jumper 0805
4440	4822 051 20008	0R Jumper 0805

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ELECTRICAL PARTS LIST - FRONT BOARD

4441	4822 051 20008	0R Jumper 0805
4442	4822 051 20008	0R Jumper 0805
4443	4822 051 20008	0R Jumper 0805
4445	4822 051 20008	0R Jumper 0805
4446	4822 051 20008	0R Jumper 0805
4447	4822 051 20008	0R Jumper 0805
4448	4822 051 20008	0R Jumper 0805
4449	4822 051 20008	0R Jumper 0805
4450	4822 051 20008	0R Jumper 0805
4451	4822 051 20008	0R Jumper 0805
4452	4822 051 20008	0R Jumper 0805
4453	4822 051 20008	0R Jumper 0805
4454	4822 051 20008	0R Jumper 0805
4455	4822 051 20008	0R Jumper 0805
4456	4822 051 20008	0R Jumper 0805
4457	4822 051 20008	0R Jumper 0805
4458	4822 051 20008	0R Jumper 0805
4459	4822 051 20008	0R Jumper 0805
4460	4822 051 20008	0R Jumper 0805
4461	4822 051 20008	0R Jumper 0805
4462	4822 051 20008	0R Jumper 0805
4463	4822 051 20008	0R Jumper 0805
4464	4822 051 20008	0R Jumper 0805
4465	4822 051 20008	0R Jumper 0805
4466	4822 051 20008	0R Jumper 0805
4467	4822 051 20008	0R Jumper 0805
4468	4822 051 20008	0R Jumper 0805
4469	4822 051 20008	0R Jumper 0805
4471	4822 051 20008	0R Jumper 0805
4473	4822 051 20008	0R Jumper 0805
4474	4822 051 20008	0R Jumper 0805
4475	4822 051 20008	0R Jumper 0805
4476	4822 051 20008	0R Jumper 0805
4477	4822 051 20008	0R Jumper 0805
4478	4822 051 20008	0R Jumper 0805
4479	4822 051 20008	0R Jumper 0805
4480	4822 051 20008	0R Jumper 0805
4481	4822 051 20008	0R Jumper 0805
4482	4822 051 20008	0R Jumper 0805
4484	4822 051 20008	0R Jumper 0805
4485	4822 051 20008	0R Jumper 0805
4490	4822 051 20008	0R Jumper 0805
4492	4822 051 20008	0R Jumper 0805
4493	4822 051 20008	0R Jumper 0805
4494	4822 051 20008	0R Jumper 0805
4495	4822 051 20008	0R Jumper 0805
4496	4822 051 20008	0R Jumper 0805
4497	4822 051 20008	0R Jumper 0805
4600	4822 051 20008	0R Jumper 0805
4601	4822 051 20008	0R Jumper 0805
4602	4822 051 20008	0R Jumper 0805
4603	4822 051 20008	0R Jumper 0805
4800	4822 051 20008	0R Jumper 0805
4803	4822 051 20008	0R Jumper 0805
4806	4822 051 20008	0R Jumper 0805
4808	4822 051 20008	0R Jumper 0805
4809	4822 051 20008	0R Jumper 0805
4810	4822 051 20008	0R Jumper 0805
4812	4822 051 20008	0R Jumper 0805
4813	4822 051 20008	0R Jumper 0805
4814	4822 051 20008	0R Jumper 0805
4816	4822 051 20008	0R Jumper 0805
4817	4822 051 20008	0R Jumper 0805
4821	4822 051 20008	0R Jumper 0805
4822	4822 051 20008	0R Jumper 0805
4824	4822 051 20008	0R Jumper 0805
4825	4822 051 20008	0R Jumper 0805
4826	4822 051 20008	0R Jumper 0805
4829	4822 051 20008	0R Jumper 0805
4830	4822 051 20008	0R Jumper 0805
4832	4822 051 20008	0R Jumper 0805
4833	4822 051 20008	0R Jumper 0805
4835	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5400	4822 157 62552	Coil 2,2µH 5%
5401	4822 157 62552	Coil 2,2µH 5%
5402	4822 157 62552	Coil 2,2µH 5%
5801	4822 157 62552	Coil 2,2µH 5%

DIODES

6400	4822 130 31878	1N4003G
6402	4822 130 10792	LTL-1CHPE
6403	4822 130 10792	LTL-1CHPE
6404	4822 130 10792	LTL-1CHPE
6405	4822 130 10792	LTL-1CHPE
6461	4822 130 30621	1N4148
6462	4822 130 30621	1N4148
6463	4822 130 30621	1N4148
6464	4822 130 30621	1N4148
6465	4822 130 30621	1N4148
6466	4822 130 30621	1N4148
6467	4822 130 30621	1N4148
6468	4822 130 30621	1N4148
6469	4822 130 30621	1N4148
6470	4822 130 30621	1N4148
6471	4822 130 30621	1N4148
6472	4822 130 30621	1N4148
6473	4822 130 30621	1N4148
6474	4822 130 30621	1N4148
6475	4822 130 30621	1N4148
6478	4822 130 30621	1N4148
6481	4822 130 30621	1N4148
6484	4822 130 30621	1N4148

ELECTRICAL PARTS LIST - FRONT BOARD

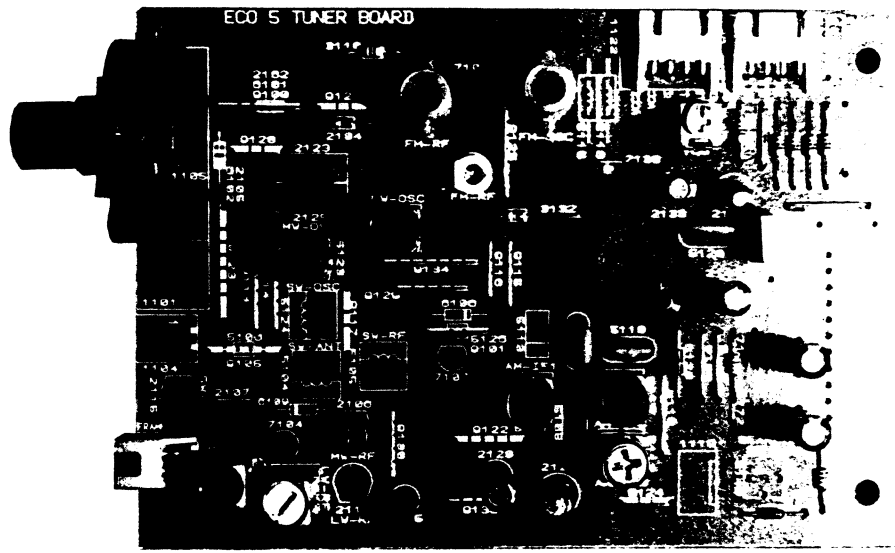
DIODES

6485	4822 130 31878	1N4003G
6486	4822 130 30621	1N4148
6500	4822 130 10791	LTL-1CHGE
6501	4822 130 10791	LTL-1CHGE
6502	4822 130 10791	LTL-1CHGE
6520	4822 130 10792	LTL-1CHPE

TRANSISTORS & INTEGRATED CIRCUITS

7400	4822 209 17346	TMP87CS71F - '545S51851'
7402	4822 209 31508	ST24C01B6
7403	4822 209 31981	SAA6579T
7404	4822 130 10165	GP1U28XP
7405	4822 209 15449	74HC4094D
7420	4822 130 60511	BC847B
7421	4822 130 60511	BC847B
7422	4822 130 60511	BC847B
7425	4822 130 60511	BC847B
7426	4822 130 60511	BC847B
7427	4822 130 60511	BC847B
7805	4822 130 60511	BC847B
7806	4822 130 60511	BC847B

Note : Only the parts mentioned in this list are normal service spare parts.



TUNER BOARD ECO5

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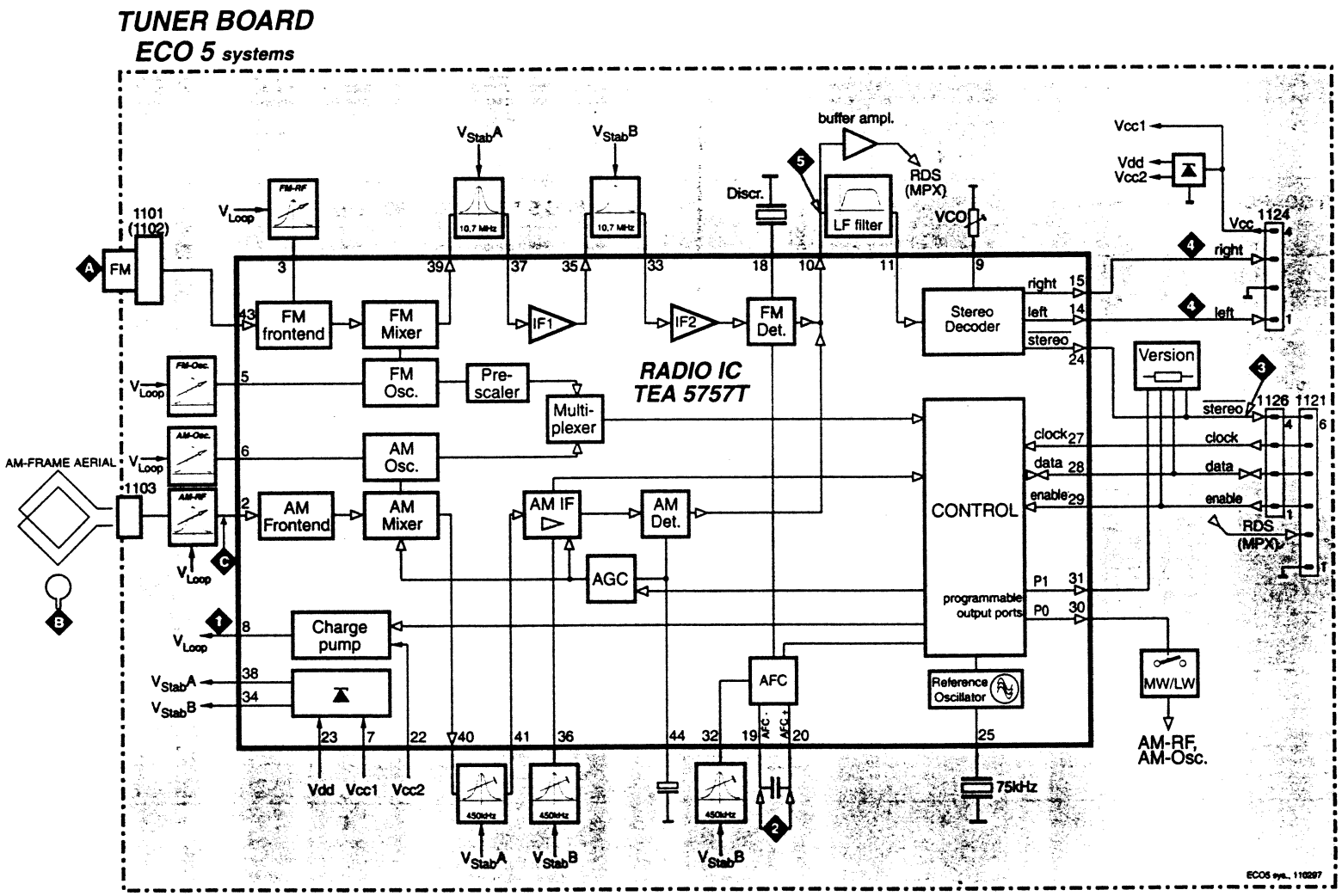
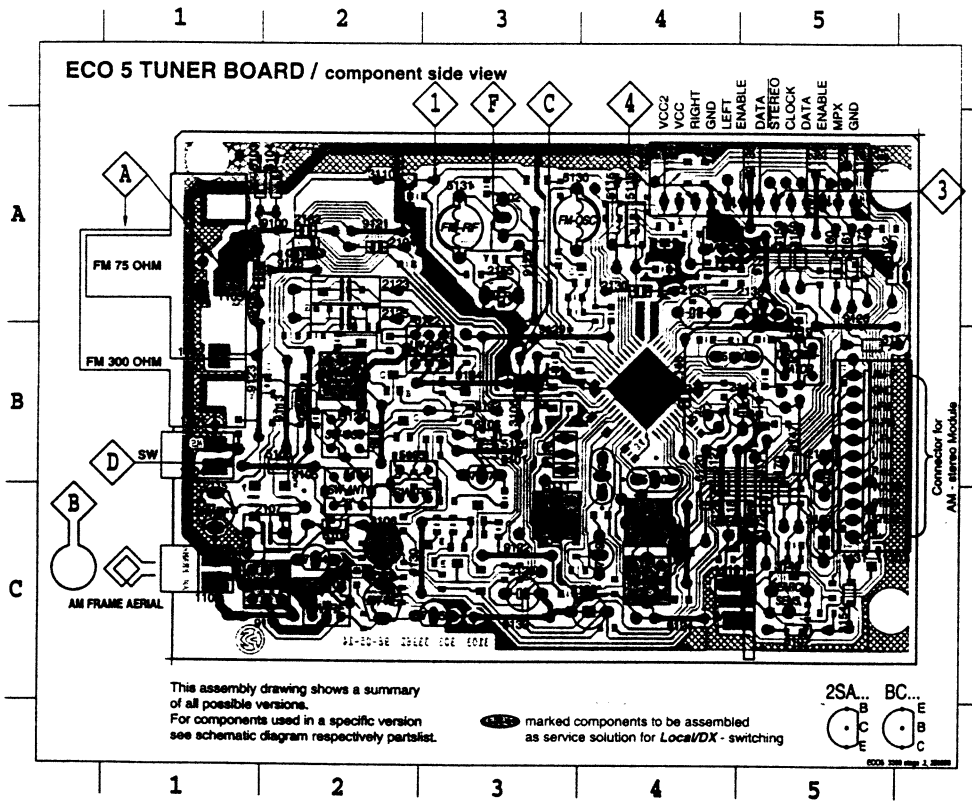
BLOCKDIAGRAM

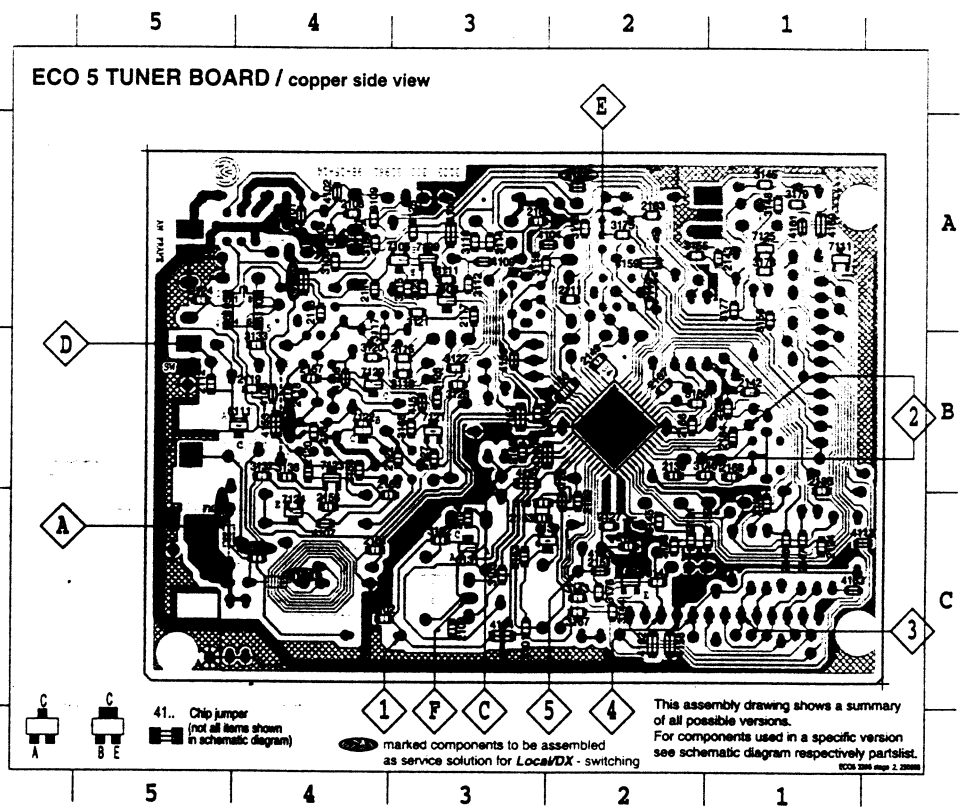


7B-2

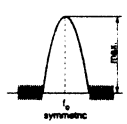
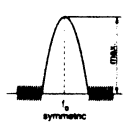
1101 A1	2106 C2	2137 C5	3149 C5	3173 A5	5114 C4	5130 A3	7104 C2	9117 B2	9129 B3		
1102 A1	2107 C2	2138 A5	3152 A5	5102 C2	5115 A4	5131 A3	7105 C3	9118 B4	9130 C3		
1103 C1	2110 C2	2144 B5	3154 C5	5103 C2	5116 A4	6101 A2	7107 B3	9119 C4	9131 A5		
1104 B1	2115 C1	2148 B4	3157 B5	5104 C2	5119 B5	6102 A1	7119 C4	9120 B4	9133 C3		
1105 A1	2123 A2	2155 A3	3158 A5	5105 B2	5120 B4	6103 A1	9100 A2	9121 A2	9134 B3		
1119 C5	2125 A2	2162 A2	3159 A5	5106 B2	5121 B4	6104 A2	9101 B3	9122 C3	9136 A5		
1120 A5	2128 C3	3105 B3	3160 A5	5109 B4	5122 B3	6106 B3	9105 B2	9123 B1	9137 A5		
1130 B5	2129 C4	3110 A2	3161 A5	5110 B4	5123 B2	6107 C5	9111 C2	9124 C4			
1131 B5	2130 A4	3132 B3	3170 C5	5111 C3	5124 B2	6109 C2	9113 B2	9125 A3			
2104 A2	2133 A4	3142 A4	3171 C5	5112 C4	5126 B3	6120 C4	9114 B2	9126 B5			
2105 A1	2135 B5	3147 B5	3172 C5	5113 B3	5127 B4	7102 A3	9115 B3	9128 A2			

2101 C4	2118 B4	2139 B2	2153 C3	2166 B2	3112 A3	3123 A3	3143 C2	3175 A2	4105 B3	4153 B4	6105 A4	7120		
2102 C4	2119 B4	2141 B1	2154 C3	2167 B2	3113 A2	3125 A3	3144 C2	3176 C2	4106 B4	4154 C3	6110 A4	7121		
2103 C3	2120 B4	2142 B1	2156 C4	2168 B1	3114 A3	3126 B3	3145 C2	3177 A1	4107 C4	4155 A4	6111 B4	7122		
2108 A4	2122 B3	2143 A1	2157 B4	3101 C3	3115 A3	3127 B3	3146 A1	3178 A1	4108 B4	4156 A2	6130 C2	7123		
2109 A4	2124 A5	2145 C1	2158 B4	3102 C3	3116 A3	3128 B3	3148 A1	3179 A1	4109 A3	4157 B3	6131 C3	7124		
2111 A2	2126 C2	2146 C1	2159 C2	3103 C3	3117 B4	3133 B4	3153 C2	3180 A4	4110 A3	4158 C2	7101 B2	7125		
2112 B5	2127 C2	2147 C1	2160 C4	3104 B3	3118 B3	3134 B4	3155 A2	3181 C3	4111 C1	4159 A2	7103 C2			
2113 A4	2131 C2	2149 B2	2161 A3	3106 C4	3119 A3	3136 B4	3156 A1	4101 A4	4120 C2	4160 A1	7106 A3			
2114 A4	2132 C1	2150 B2	2163 A2	3108 A4	3120 B4	3137 B4	3167 C2	4102 A4	4150 B2	4161 A1	7108 A3			
2116 B3	2134 C1	2151 C2	2164 B1	3109 A4	3121 A3	3140 B2	3168 B3	4103 C2	4151 B3	4162 C1	7109 A3			
2117 A3	2136 B1	2152 C3	2165 B3	3111 A3	3122 B3	3141 C2	3169 B2	4104 A2	4152 B3	4163 C1	7111 A1			




ECO 5 TUNER BOARD / copper side view
41.. Chip jumper (not all items shown in schematic diagram)
marked components to be assembled as service solution for Local/DX - switching
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUSTMENT TABLE (ECO5 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	◇1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	◇F	IC 7101 pin 21 shortcircuit to block AFC ‖ 2141	5119	◇2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	◇A mod=1kHz Δf=±22.5kHz	108MHz	2155	◇4	MAX
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	◇A	98MHz	3142	◇3	152kHz ±1kHz [1]
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	◇C Δf=±15kHz V_{RF} = 3mV	IC 7101 pin 36 ‖ 100nF, 220Ω	5111	◇4	
			IC 7101 pin 40 ‖ 100nF, 220Ω see remark [2]	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 10mV		5114	◇2	0 ± 2 mV DC
AM RF [3]						
MW [4] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	◇B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	◇4	
	558kHz		558kHz	5102		
LW 153 - 279kHz	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz		560kHz	5102		

ECO5 disc ass. 08787

Use service test program. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

[1] If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

[2] RC network serves for damping the IF-filter while adjusting the other one.

[3] For AM RF adjustments the original frame antenna has to be used !

[4] MW has to be aligned before LW.

Repeat

7B-3

TUNER BOARD ECO5 / Systems

VERSION PROGRAMMING COMPONENTS					
	6120	3156	3157	3170	remark
/00 FM/MW/LW	x	-	-	-	7111 not mounted
/00 FM/MW/LW/SW-Eu	-	-	-	-	
/01 FM/MW-Stereo	-	-	x	-	SW
/01 FM/MW	-	x	-	x	
/01 FM/MW/SW-Ov	-	x	-	-	
/06 FM-Japan/MW-stereo	-	-	-	x	
/13 FM/MW-Stereo	-	-	x	-	SW
/14 FM-ORT/MW/LW	x	-	x	x	
/14 FM-ORT/MW	x	-	x	-	
/17 FM/AM-Stereo	-	-	x	-	SW
/17 FM/AM	x	-	-	x	
/.. FM/MW/2xSW	-	-	x	x	
/15 FM/MW/SW-Eu	-	x	x	x	

x = component mounted
SW = Software initialisation

Service Solution for Local/DX - switching

FM-RF

FM-OSCILLATOR

MW/LW-RF

AM-OSCILLATOR

VCO

STEREO DECODER

DISCRIMINATOR

buffer amplifier

AM-IF1

AM-IF2

FM-IF1

FM-IF2

AM-AFC

CONTROL

XTAL OSC.

version detection

Programmable Output Ports

to/from CONTROL BOARD / Source Selector part

to/from AM-stereo module

2140 exchanged by 2164 (SMD type 0805) from layout stage 3317.9 onwards respectively 3103 303 3380.1 and 3103 308 3396.1

3140 and 5120 provisional as alternative

r....for RDS version only
s...for East European version (/14/34) only
t....for Japanese version (/06/26) only
u...for 2-band (FM/AM) version only
v...for SW-version 3.9-12.1MHz only
w...for LW only
x....not for all versions
y....for USA version (/17/37) only
z....for AM-STEREO (/06/13/26/33) versions only

Signal path
FM
AM
MPX (Audio Frequency)
AF - left/right

Vdc FM mode stereo
Vdc MW mode
Vdc LW mode

Voltages measured while set is tuned to a strong transmitter

ECO5 systems, diser.cell, 030899

1101 A 1
1102 B 2
1103 D 2
1121 E20
1124 G20
1126 E20
1130 I20
1131 I20
2101 C 6
2102 G 7
2103 D 9
2104 B 6
2106 F 5
2107 G 8
2108 G 3
2109 G 3
2111 C13
2120 L11
2122 N11
2123 M11
2125 M11
2126 G 9
2127 G10
2128 C11
2129 C 9
2130 H17
2131 I10
2132 I10
2133 H11
2134 J17
2135 J18
2136 J17
2136 J18
2136 H12
2136 H13
2140 H14
2141 H14
2142 H14
2143 I17
2144 H17
2145 G16
2146 F15
2147 F16
2148 F16
2149 C15
2150 B13
2152 F 7
2153 E 8
2154 E 7
2155 D 8
2158 M11
2159 F 9
2160 M12
2161 D16
2163 E16
2164 H14
2165 C 9
2166 G16
2167 F16
2168 I13
3101 E 7
3102 E 7
3103 C 8
3104 B11
3105 C 7
3108 E 3
3109 F 2
3110 F 6
3113 C13
3119 B13
3120 C 6
3123 M 7
3125 M 6
3128 M 8
3132 L 9
3134 M12
3137 M13
3140 I13
3141 G10
3142 G 9
3143 I10
3144 I10
3145 H10
3146 I17
3147 I15
3152 H18
3153 H18
3154 H18
3155 H17
3156 G17
3157 F17
3158 F18
3159 F18
3160 E18
3161 E18
3167 G18
3169 G15
3170 F17
3171 H15
3175 B16
3176 J 9
3177 I18
3178 I15
3179 I16
3180 M7
4101 G 5
4102 F 5
4103 G 9
4104 B13
4105 B11
4106 K12
4108 L 9
5102 E 4
5103 F 4
5109 B13
5110 B14
5111 A13
5112 A15
5113 B12
5114 C16
5119 I12
5120 H13
5121 F15
5122 M11
5123 L11
5130 E 8
5131 D 8
6103 C 2
6104 C 3
6105 K12
6105 E 6
6106 C 6
6107 H17
6120 G16
6130 E 7
6131 D 7
7101 G11
7102 D 8
7103 I 9
7104 E 3
7105 F 2
7109 M 7
7111 F18
7119 B13
7122 M 9
7124 M13
7125 I16
9100 B 4
9101 C 6
9117 L10
9126 A 4

MISCELLANEOUS

1101	4822 267 31505	Antenna Socket 300R	
1102	4822 267 10283	Antenna Socket Coax IEC 75R	

CAPACITORS

2101	5322 122 32531	100pF 5% 50V	
2101	4822 126 13692	47pF 1% 63V	for USA
2102	4822 122 33177	10nF 20% 50V	
2103	5322 122 34123	1nF 10% 50V	
2104	4822 122 33195	100pF 10% 50V	
2106	4822 125 50355	Trimmer 4-20pF	for LW version
2106	4822 125 60101	Trimmer 3-11pF 100V	
2107	4822 121 51319	1µF 10% 63V	
2108	5322 122 32531	100pF 5% 50V	for LW version
2109	5322 122 32448	10pF 5% 50V	for LW version
2120	4822 126 13691	27pF 1% 63V	for LW version
2120	5322 122 32658	22pF 5% 50V	
2122	4822 122 33891	3,3nF 10% 63V	for LW version
2125	4822 121 51381	560pF 5% 400V	
2126	5322 122 31863	330pF 5% 50V	
2127	4822 126 13473	220nF +80/-20% 50V	
2128	4822 124 41579	10µF 20% 50V	
2129	4822 124 41584	100µF 20% 10V	
2130	4822 126 11585	22nF+80/- 20% 25V	
2131	4822 122 33325	470nF 16V	
2132	4822 122 33325	470nF 16V	
2131	4822 126 13482	470nF +80/- 20% 16V	
2132	4822 126 13482	470nF +80/- 20% 16V	
2133	4822 124 40242	1µF 20% 63V	
2134	4822 126 13188	15nF 5% 63V	
2134	5322 122 32654	22nF 10% 63V	for USA
2135	4822 124 40746	0,22µF 20% 63V	
2136	4822 126 13188	15nF 5% 63V	
2136	5322 122 32654	22nF 10% 63V	for USA
2137	4822 124 40746	0,22µF 20% 63V	
2138	4822 124 41576	2,2µF 20% 50V	
2139	4822 126 14236	50V 15pF 5%	
2140	4822 121 51252	470nF 5% 63V	
2141	4822 126 10002	100nF 20% 25V	
2142	4822 126 10002	100nF 20% 25V	
2143	4822 126 13473	220nF +80/-20% 50V	
2144	4822 124 40242	1µF 20% 63V	
2145	4822 122 33575	220pF 5% 50V	
2146	4822 122 33575	220pF 5% 50V	
2147	4822 122 33575	220pF 5% 50V	
2148	4822 126 11585	22nF+80/- 20% 25V	
2149	5322 122 32654	22nF 10% 63V	
2150	4822 122 31947	100nF 20% 63V	
2152	5322 116 80853	560pF 5% 63V	for East. Europe
2152	4822 126 12105	33nF 5% 63V	
2153	4822 122 32139	12pF 2% 63V	for East. Europe
2153	4822 122 32504	15pF 2% 63V	
2155	4822 125 60101	Trimmer 3-11pF 100V	
2158	5322 122 32448	10pF 5% 50V	for LW version
2159	5322 122 32659	33pF 5% 50V	
2160	5322 122 32654	22nF 10% 63V	
2161	4822 126 10002	100nF 20% 25V	
2163	4822 126 10002	100nF 20% 25V	
2164	4822 126 13482	470nF +80/- 20% 16V	
2165	4822 126 10002	100nF 20% 25V	
2166	5322 122 34123	1nF 10% 50V	
2167	4822 122 32139	12pF 2% 63V	
2168	4822 126 13695	82pF 1% 63V	

RESISTORS

3101	4822 051 20562	5k6 5% 0,1W	for East. Europe
3101	4822 051 20333	33k 5% 0,1W	
3102	4822 051 20104	100k 5% 0,1W	
3103	4822 117 10965	18k 1% 0,1W	
3104	4822 117 11448	180R 1% 0,1W	
3105	4822 116 83872	220R 5% 0,5W	
3108	4822 117 11449	2k2 1% 0,1W	for LW version
3109	4822 051 20472	4k7 5% 0,1W	for LW version
3110	4822 116 52195	47R 5% 0,5W	
3120	4822 051 20008	0R Jumper 0805	
3123	4822 051 20472	4k7 5% 0,1W	for LW version
3125	4822 117 10833	10k 1% 0,1W	for LW version
3128	4822 117 11449	2k2 1% 0,1W	for LW version
3132	4822 116 52195	47R 5% 0,5W	
3134	4822 051 20223	22k 5% 0,1W	
3137	4822 051 20223	22k 5% 0,1W	for LW version
3140	4822 051 20008	0R Jumper 0805	
		5120=CDA10.7MG40K	
3140	4822 117 10353	150R 1% 0,1W	
		5120=CDA10.7MG61KA	
3141	4822 051 20563	56k 5% 0,1W	
3142	4822 100 11163	Trimmer 100k 30% 0,1W	
3143	4822 051 20223	22k 5% 0,1W	for RDS version
3144	4822 051 10102	1k 2% 0,25W	for RDS version
3145	4822 117 11449	2k2 1% 0,1W	
3146	4822 051 20229	22R 5% 0,1W	
3152	4822 116 83883	470R 5% 0,5W	
3153	4822 051 20471	470R 5% 0,1W	
3154	4822 116 83868	150R 5% 0,5W	
3155	4822 051 20471	470R 5% 0,1W	
3156	4822 051 20104	100k 5% 0,1W	for /21/30/33 only
3157	4822 116 52234	100k 5% 0,5W	for East. Europe
3158	4822 116 83883	470R 5% 0,5W	
3159	4822 116 83883	470R 5% 0,5W	
3160	4822 116 83883	470R 5% 0,5W	
3161	4822 116 83883	470R 5% 0,5W	
3167	4822 117 11503	220R 1% 0,1W	
3169	4822 051 20154	150k 5% 0,1W	
3170	4822 116 52234	100k 5% 0,5W	
3171	4822 116 52219	330R 5% 0,5W	

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ELECTRICAL PARTS LIST - ECO5 TUNER BOARD

3176	4822 051 10102	1k 2% 0,25W	for RDS version
3180	4822 051 20223	22k 5% 0,1W	for LW version
4101	4822 051 20008	0R Jumper 0805	for 2-Band only
4102	4822 051 20008	0R Jumper 0805	for 2-Band only
4103	4822 051 20008	0R Jumper 0805	
4104	4822 051 20008	0R Jumper 0805	
4105	4822 051 20008	0R Jumper 0805	
4106	4822 051 20008	0R Jumper 0805	
4108	4822 051 20008	0R Jumper 0805	
4111	4822 051 20008	0R Jumper 0805	
4120	4822 051 20008	0R Jumper 0805	
4150	4822 051 10008	0R Jumper 1206	
4151	4822 051 20008	0R Jumper 0805	
4152	4822 051 10008	0R Jumper 1206	
4153	4822 051 10008	0R Jumper 1206	
4154	4822 051 10008	0R Jumper 1206	
4155	4822 051 10008	0R Jumper 1206	
4156	4822 051 20008	0R Jumper 0805	
4157	4822 051 10008	0R Jumper 1206	
4158	4822 051 10008	0R Jumper 1206	
4159	4822 051 10008	0R Jumper 1206	
4162	4822 051 10008	0R Jumper 1206	

COILS & FILTERS

5102	4822 157 71634	MW RF Coil	
5103	4822 157 71635	LW RF Coil	for LW version
5109	4822 242 70665	Ceram Filter 10,7MHz	
5110	4822 242 70665	Ceram Filter 10,7MHz	
5111	4822 158 60511	AM-IF Filter 450kHz	
5112	4822 157 70302	AM-IF Filter 450kHz	
5114	4822 157 70302	AM-IF Filter 450kHz	
5119	4822 157 11443	Discriminator 10,7MHz	
5120	4822 242 82065	Cer. Disc. 10,7MG40K	
5120	4822 242 10251	Cer. Disc.10,7MG61KA-TF21	
5121	4822 242 10261	Quartz 75kHz	
5122	4822 157 60517	Osc. Coil LW	for LW version
5123	4822 157 60517	Osc. Coil MW	
5130	4822 156 30947	RF-Coil 1.5T	
5131	4822 156 30947	RF-Coil 1.5T	

DIODES

6103	4822 130 30621	1N4148	
6104	4822 130 30621	1N4148	
6105	4822 130 83075	HN1V02H-B	
6106	4822 130 30621	1N4148	
6107	4822 130 34488	BZX79-B11	
6120	4822 130 30621	1N4148	not for /21/30/33
6130	4822 130 82833	1SV228	
6131	4822 130 82833	1SV228	

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90924	TEA5757H/V1	
7102	4822 130 60093	2SA838B	
7103	4822 130 42513	BC858C	for RDS version
7104	5322 130 44779	BC338-40	for LW version
7105	5322 130 44779	BC338-40	for LW version
7109	5322 130 41983	BC858B	for LW version
7111	5322 130 42136	BC848C	
7122	5322 130 42136	BC848C	for LW version
7124	5322 130 42136	BC848C	for LW version

Note: Only the parts mentioned in this list are normal service spare parts.

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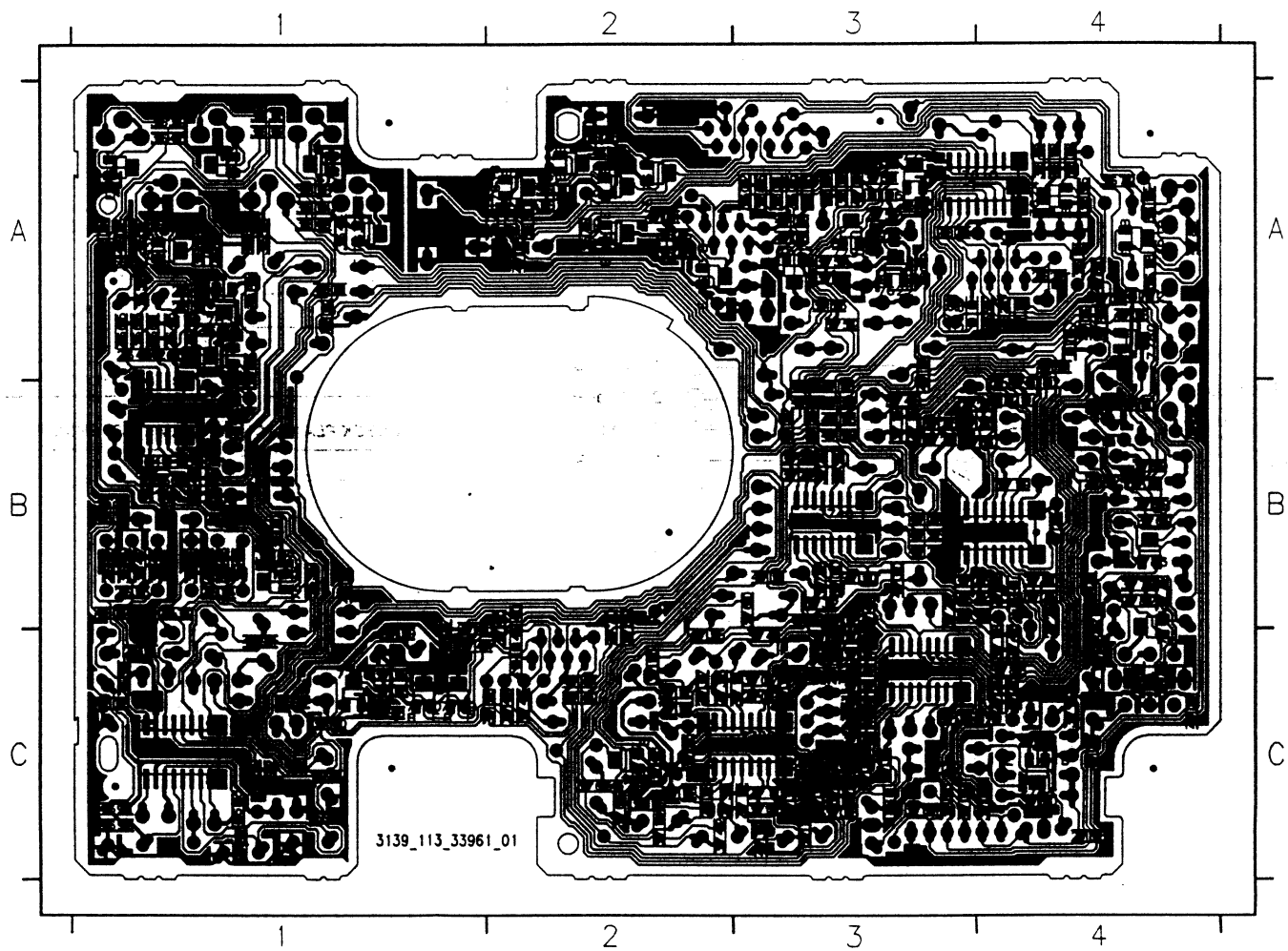
CHIP LAYOUT

2621	A3	2698	C1	2727	C4	3604	A3	3643	A1	3676	A3	3712	C3	3736	C3	3753	C2	4602	A1	4710	B4	4734	C3	7630	C1
2622	A4	2699	A1	2728	B3	3605	A3	3644	A1	3678	A2	3713	C2	3737	C1	3755	C2	4603	A1	4711	A4	4735	C2	7631	A1
2623	A4	2701	C4	2729	B3	3606	A3	3645	B1	3679	A2	3714	C2	3738	C1	3756	C2	4604	A1	4712	B4	4736	C3	7632	A1
2624	A3	2702	C3	2730	B3	3608	A4	3646	B1	3680	A2	3715	C2	3739	C1	3757	C2	4605	B1	4713	A4	4737	C3	7633	A1
2625	A4	2703	C3	2733	C2	3610	A4	3647	B1	3683	A1	3716	C2	3740	C1	3758	C2	4606	B1	4714	A3	4738	C3	7634	A1
2631	C1	2704	C3	2734	C2	3612	A4	3648	B1	3684	A1	3717	B3	3741	C3	3769	B4	4607	B1	4715	B3	4739	C3	7635	A1
2632	B1	2705	C3	2735	C3	3613	A3	3649	B1	3686	A4	3718	C4	3742	C2	3770	B4	4608	C1	4716	B3	4740	B2	7636	B1
2633	B1	2706	C3	2737	C2	3614	A4	3650	B1	3687	A3	3719	B4	3743	B2	3771	B4	4609	B1	4717	B3	4741	C2	7637	A1
2634	B1	2707	C3	2738	C2	3616	A4	3651	C1	3689	C1	3720	B4	3744	C1	3772	A4	4610	C1	4718	B3	4742	C2	7638	A1
2635	B1	2708	C3	2742	B4	3618	A4	3657	A1	3691	C1	3721	B4	3745	C2	3774	B4	4691	C1	4719	B3	4743	C2	7640	B1
2636	B1	2709	C3	2743	C4	3623	A2	3658	A1	3692	C1	3722	B4	3746	C2	3775	C4	4693	C1	4720	B3	4781	A4	7710	C3
2639	A1	2710	C3	2744	B3	3624	A2	3659	A1	3695	B1	3723	C4	3748	C2	3776	B4	4694	C1	4721	B3	4783	A4	7720	C3
2640	B1	2711	C2	2745	B1	3625	A2	3660	A1	3696	C1	3724	B3	3749	B3	3777	B4	4695	C1	4722	B3	4785	A3	7730	B4
2643	A1	2712	C2	2760	B4	3626	A2	3661	A1	3701	C4	3725	B3	3751	A3	3779	C4	4696	B1	4723	B4	7610	A4	7740	B3
2644	B1	2717	B3	2769	B2	3628	A2	3662	B1	3702	C3	3726	B3	3752	A3	3780	C4	4697	C1	4724	B3	7612	A2	7780	A4
2645	A1	2718	C4	2770	B2	3630	A2	3663	A1	3703	C3	3727	B3	3753	A3	3781	C3	4701	A3	4725	B3	7613	A2	7781	B4
2646	B1	2719	B4	2781	C4	3631	B1	3664	B1	3704	C3	3728	B3	3754	A3	3782	B4	4702	A3	4726	B3	7614	A2	7783	B4
2649	A1	2720	B4	2782	B4	3632	B1	3665	A1	3705	C3	3729	B3	3755	A3	3783	C3	4703	A3	4727	C4	7616	A4	7784	C4
2650	B1	2721	B3	2786	C4	3633	A1	3666	B1	3706	C3	3730	B3	3756	A3	3784	C3	4704	A2	4728	C4	7618	A2	7787	C2
2651	A1	2722	B3	2787	C4	3634	A1	3667	A1	3707	C3	3731	B3	3757	A3	3786	A4	4705	A2	4729	C3	7619	A2	7788	C1
2652	B1	2723	B3	2788	C1	3637	A1	3668	A1	3708	C3	3732	B3	3758	A3	3787	A4	4706	A2	4730	B3	7620	A2	7789	C1
2653	A1	2724	B4	3601	A3	3638	A1	3669	A1	3709	C3	3733	B3	3759	A3	3788	C4	4707	A4	4731	B3	7622	A3	7790	C1
2654	A1	2725	B4	3602	A3	3639	A1	3670	B1	3710	C3	3734	C3	3760	B3	3789	B4	4708	A4	4732	B3	7623	A3	7791	A3
2697	C1	2726	B4	3603	A3	3640	A1	3672	A4	3711	C3	3735	C3	3762	B4	4601	A1	4709	A4	4733	C3	7624	A4	7792	A3



ETF5-FE TAPE MODULE

(Dolby Version)

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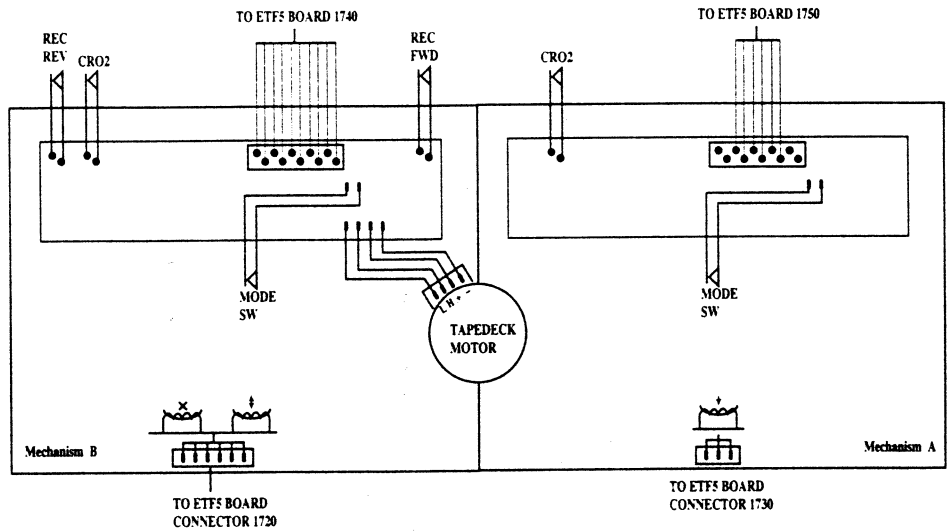
9-1

Tapedeck wiring (Double deck)



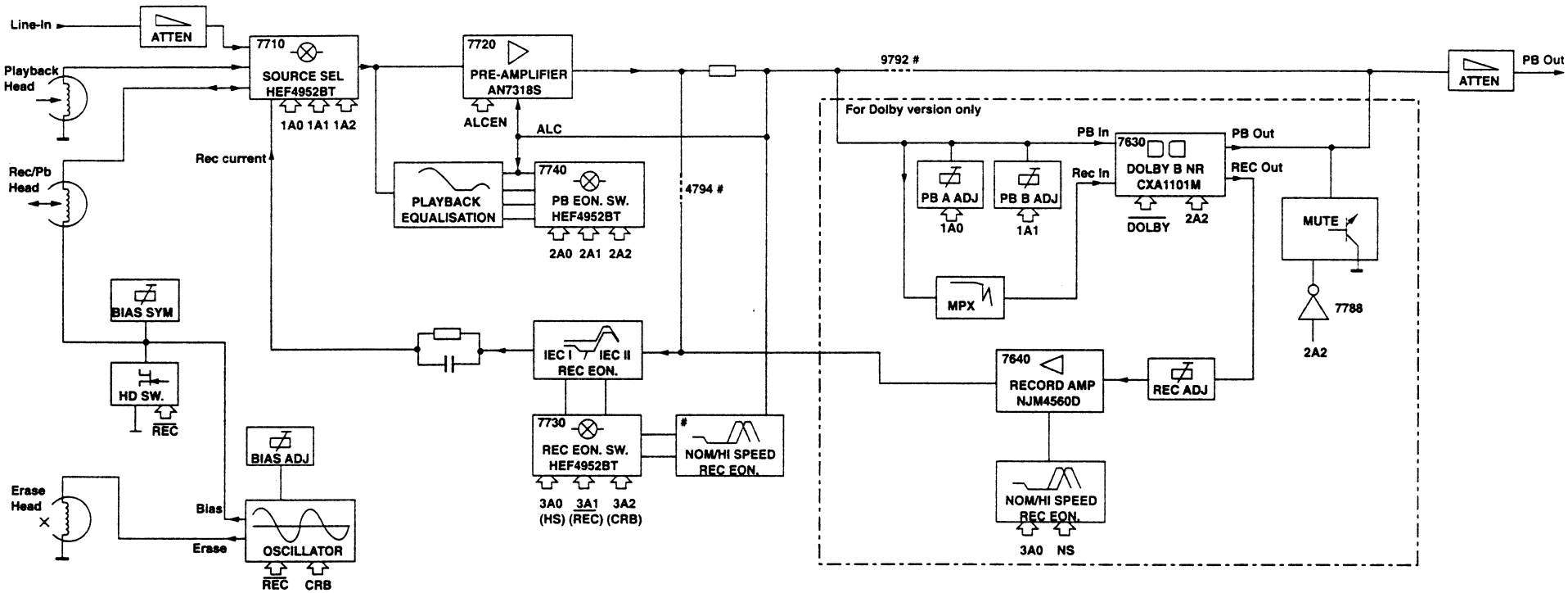
OPTIONS / VARIANTS TABLE

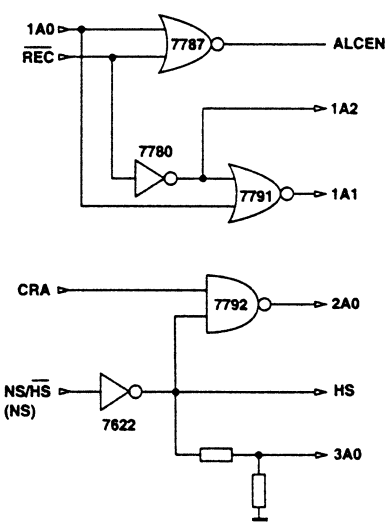
MODULE	ETF5-FE		ETF5A-FE			
VARIANT	1	2	3	4		
NAME	DB/DD/FR	ND/DD/FR	DB/DD/FR	ND/DD/FR		
Deck configuration	double	double	double	double		
Autoreverse	yes (B)	yes (B)	yes (B)	yes (B)		
Auto-replay	no	no	no	no		
Motor configuration	single	single	single	single		
Auto tape type selection	yes	yes	yes	yes		
Dolby B type Noise Reduction	yes	no	yes	no		
19 kHz pilot suppression	yes	no	yes	no		
High speed dubbing	yes	yes	yes	yes		

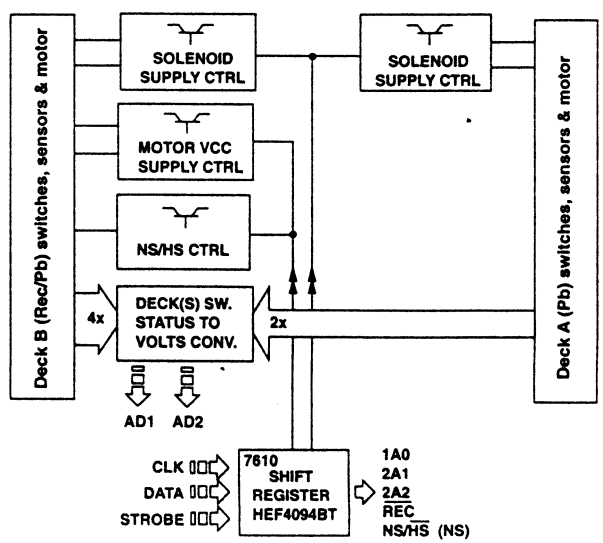
DB = Dolby B NR
DD = Double Deck
FF = Non-Autoreverse
FR = Autoreverse Deck B
ND = Non-Dolby
SD = Single Deck

9-2

BLOCK DIAGRAM







NOTE: # For Non-dolby version only
Only 1 channel is presented.

MicroProcessor Control / Communication lines

Direct / Indirect Control lines from Shift Registers

Brief introduction

General

1. Playback Mode
   Signal from the playback head Deck A or Deck B is selected and fed through by the Mode Selector IC7710 (HEF4952B). The signal is amplified by amplifier IC7720 (AN7318S) before feeding to the IC7740 (HEF4952B) and out to the AF Board via connector 1701. For Dolby sets the signal from IC7740 will pass through IC7630 (CXA1551M) for dolby noise processing before going to the connector 1701.

2. Recording Mode
   Recording Signal is selected and fed through by the Mode Selector IC7710 (HEF4952B) which is then amplified by the amplifier IC7720 (AN7318S). The amplified output signal will pass through IC7730 (HEF4952B) for record equalization and back to IC7710 (HEF4952B) before registered into the Rec/PB Head of Deck B. For Dolby sets the amplified wll pass through IC7630 (CXA1551M) for dolby noise processing, amplified to the right level by IC7640 (NJM4560M) before record equalization.

3. Dubbing Mode
   In Dubbing mode, signal from the playback head Deck A is selected and fed through by the Mode Selector IC7710 (HEF4952B) which is then equalised for playback mode by the amplifier IC7720 (AN7318S) so that a flat response is obtained after the pre-amp. The equalised signal will then follow the same path as in the Recording mode.

4. Mode Selector
   The Mode Selector IC7710 (HEF4952B) caters for 4 inputs signal, namely Playback Signal from Deck A, Playback Signal from Deck B, Recording Signal and Dubbing Signal.

5. Amplifier PB/REC
   Amplifier IC7720 (AN7318S) is for the purpose of amplifying the Playback and Recording signal from the Mode Selector.

6. Automatic Level Control (ALC)
   ALC circuit consists of resistors (3760, 3765, 3766, 3767), capacitors (2762 , 2763) and control by transistor 7787 (BC847B). ALC limits the amplifier output to a constant value when input signal becomes too large, thus limiting recording current to below saturation level, to prevent recording distortion.

7. Muting Circuit (For Non-Dolby only)
   Switch S4 of the IC7740 (HEF4952B) is for the purpose of muting the output during Recording mode. During Recording mode, S4 is closed and shorted to the ground.

8. IC7740 (HEF4952B)
   The function of the IC7740 (HEF4952B) is to change time constant between 120us Ferro (IEC I) and 70us Chrome (IEC II) during playback mode. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II). This IC will switch to Flat Gain during the Recording mode.

9. IC7730 (HEF4952B)
   The function of the IC7730 (HEF4952B) is to change gain and time constant according to tape type and recording speed to boost recording current at higher frequency during recording to compensate for head loss. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II).

10. Bias Level
    Bias Level making use of the Variable resistor (3773) for adjusting the optimal level of the bias current for Ferro or Chrome.

11. Bias Symm (For Dolby only)
    Bias Symm making use of the Variable resistor (3785) to adjust the bias current for the left and the right channel to be equal.

12. PB Switch
    Playback Switch which consists of the FETs 7785 (For Dolby only) & 7786 (J111) is for the purpose of providing a virtual ground for the Rec/PB Head (Deck B) during Playback mode. During the Playback mode, the FETs are turn on and shorted pin 2 and 4 of connector 1720 to the ground. During Recording mode, the FETs are turn off to allow the oscillator signal to be superposition onto the Recording signal for recording.

13. Muting Circuit
    The muting circuit which consists of transistors 7788, 7789 and 7790 (BC847B) is for the purpose of muting the output during Recording mode.

14. Motor Speed
    During High speed dubbing, a feedback signal from the uP through pin 03 of the IC7610 (HEF4094BT) will trigger the transistors 7622 (BC847B) and 7616 (BC857B) to cause a change in the voltage level between High and Low, thus changing the speed of the motor.

15. IC7610 (HEF4094BT)
    IC7610 (HEF4094BT) is a Shift Register use for issues the logic for cmos switch ICs (HEF4952B) via 1A0, 2A1 and 2A2. It also issues logic to On/Off SOL_A, SOL_B and MOT. Recording speed is controlled via NS/HS.

Dolby Circuit (For sets with Dolby B NR only)

16. IC7630 (CXA1551M)
    IC7630 (CXA1551M) in the Dolby circuit is a Dolby Noise Reduction Type B IC for the Playback and Recording signal. Noise Reduction ON/OFF are controlled by $\overline{\text{DOLBY}}$, which is from CLK, direct from uP. After clocking in DATA, CLK is set to HIGH/LOW for NR OFF/ON.

17. 19kHz Filter
    The 19kHz filters 5631 & 5632 (LXD-210) in the Dolby circuit is for the purpose of filtering the 19kHz Pilot Tone (for Tuner signal only) of the Recording signal.

18. Level Adjust
    The Variable resistor 3635, 3636,3641 and 3642 in the Dolby circuit is for adjusting the playback level of the Dolby reference (400Hz , 200nWb/m). Transistor 7631, 7632 are ON to enable adjustment of 3641, 3642 during Playback Deck A. Transistor 7633, 7634 and 3635, 3636 are active for Playback Deck B.

19. Amplifier IC7640 (NJM4560M)
    The Amplifiers 7640A & 7640B (NJM4560M) in the Dolby circuit is for the purpose of amplified the Recording signal.

NOTATIONS & ABBREVIATIONS USED IN THIS DOCUMENT

CR	Chrome (IEC type II)
DB	Dolby NR type B
DD	Double Deck
DM	Double Motor
FE	Ferro (IEC type I)
FF	Non Auto Reverse
FR	Auto Reverse on Deck B
Gnd x	Ground x
HSD	High speed dubbing
ND	Non Dolby
NR	Noise Reduction
NSD	Normal speed dubbing
PB	Playback
REC	Record
S/A	Sub-assy
SD	Single Deck
SM	Single Motor

CONNECTORS ASSIGNMENTS:

CONNECTOR 1701 — INTERCONNECTION TO AF BOARD

1	REC-L	Record input left
2	REC-R	Record input right
3	GND A	AF Ground
4	TAPE-L	Playback output left
5	+12V	D.C. supply (+12V) in
6	TAPE-R	Playback output right
7	-CMOS	Negative d.c. supply (-9V) for CMOS ICs

CONNECTOR 1703 — INTERCONNECTION TO AF BOARD

1	GND M	Motor Ground
2	+MOTOR	D.C. supply (+12V) for tape deck motor & solenoid

CONNECTOR 1706 — INTERCONNECTION TO FRONT BOARD

1	AD2	Deck sensing switches output voltage / Deck A EOT
2	AD1	Deck sensing switches output voltage / Deck B EOT
3	+5	DC supply +5V for ADC network
4	GND P	Control & Oscillator Ground
5	CLK	HEF4094BT shift register Clock line
6	DATA	HEF4094BT shift register Data line
7	STROBE	HEF4094BT shift register Strobe line

CONNECTOR 1710 — DECK B HEADS CONNECTON *(For ETF6... only)*

1	B R/P HD L+	R/P Head left channel positive
2	GND A	R/P Head return ground
3	B R/P HD R+	R/P Head right channel positive
4	ERASE HEAD	Erase Head
5	GND A	Erase Head ground

CONNECTOR 1720 — DECK B HEADS CONNECTON *(For ETF5... only)*

1	B R/P HD L+	R/P Head left channel positive
2	B R/P HD L-	R/P Head left channel negative
3	B R/P HD R+	R/P Head right channel positive
4	B R/P HD R-	R/P Head right channel negative
5	ERASE HEAD	Erase Head
6	GND A	Erase Head ground

CONNECTOR 1730 — DECK A HEAD CONNECTIONS *(For Double Deck versions only)*

1	A PB HD L+	Pb Head left channel positive
2	GND A	Pb Head return ground shield
3	A PB HD R+	Pb Head right channel positive

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CONNECTOR 1740 — DECK B CONTROL INTERFACE *(For ETF5... Double Deck only)*

1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
3	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
4	PHOTO B	Photo sensor output (tape movement indication)	
5	SOL B	Solenoid supply	
6	Vcc	Deck / Motor supply	
7	MODE	Mode switch (head engagement)	[open=off: close=engaged]
8	GND M	Deck / Motor ground	
9	H	H pin for motor	
10	L	L pin for motor	

CONNECTOR 1750 — DECK A CONTROL INTERFAC *(For ETF5... Double Deck only)*

1	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
2	PHOTO A	Photo sensor output (tape movement indication)	
3	SOL A	Solenoid supply	
4	Vcc	Deck/Motor supply	
5	MODE	Mode switch (head engagement)	[open=off: close=engaged]
6	GND M	Deck/Motor ground	

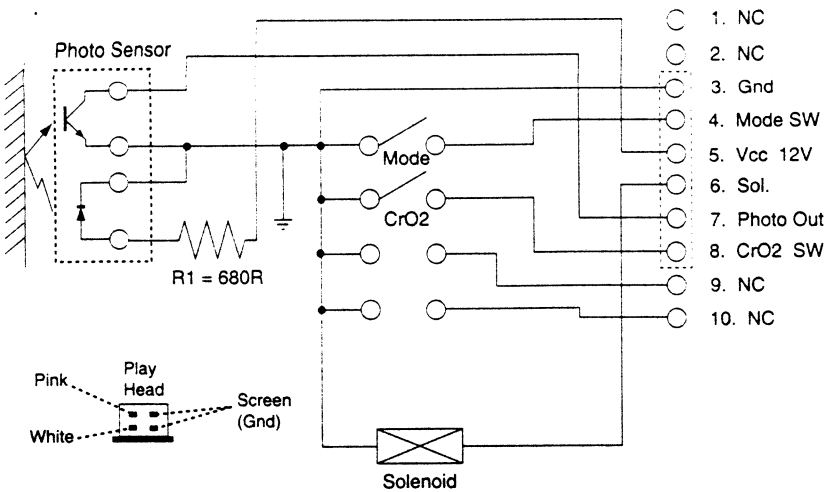
CONNECTOR 1760 — DECK B CONTROL INTERFACE *(For Single Deck only)*

1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
3	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
4	PHOTO B	Photo sensor output (tape movement indication)	
5	SOL B	Solenoid supply	
6	Vcc	Deck / Motor supply	
7	MODE	Mode switch (head engagement)	[open=off: close=engaged]
8	GND M	Deck / Motor ground	

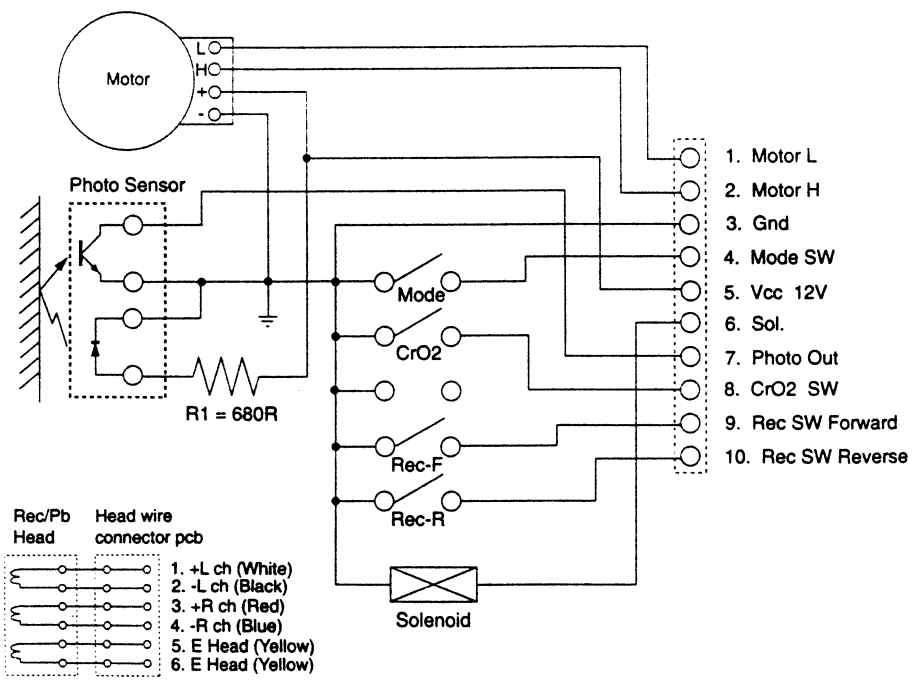
CONNECTOR 1770 — DECK A & B CONTROL INTERFACE *(For ETF6... only)*

1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
3	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
4	PHOTO B	Photo sensor output (tape movement indication)	
5	SOL B	Solenoid supply for deck B	
6	Vcc	Deck / Motor supply	
7	MODE B	Mode switch (head engagement)	[open=off: close=engaged]
8	GND M	Deck / Motor ground	
9	L	L pin for motor	
10	H	H pin for motor	
11	CrO2 A	Chrome tape detection switch deck A	[open=Cr: close=Fe]
12	SOL A	Solenoid supply for deck A	
13	PHOTO A	Photo sensor output (tape movement indication)	

TAPE MECHANISM A ELECTRONICS



TAPE MECHANISM B ELECTRONICS



9-5

General

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
ADJUST MOTOR SPEED						
HIGH SPEED	SBC420 (4822 397 30071) 3150Hz	DUBBING	① or ② LEFT RIGHT	frequency counter	3622 *	5040Hz ± 0.5%
NORMAL SPEED		PLAY B			3620	3150Hz ± 0.5%
		PLAY A			check	3150Hz -0.8/+1.8%
CHECK WOW & FLUTTER						
DECK A & B	SBC420 (4822 397 30071) 3150Hz	PLAY	① or ② LEFT RIGHT	W&F-meter	check only	≤0.4 % DIN or ≤0.35 % CCIR *
ADJUST AZIMUTH						
DECK A & B	SBC420 (4822 397 30071) 10kHz	PLAY FWD	① or ② LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right
		PLAY REV #			right hand screw	

Playback

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
ADJUST DOLBY PLAYBACK LEVEL *						
DECK A	TCC-130 (4822 397 30269) 200nWb/m	PLAY	⑦ or ⑧ LEFT RIGHT	mV-meter	3641(L), 3642(R)	548mV ±0.5dB
DECK B		PLAY FWD			3635(L), 3636(R)	
		PLAY REV #			Check	548mV ±1dB
CHECK PLAYBACK FREQUENCY RESPONSE						
PB. FREQ. RESP.	SBC420 (4822 397 30071)	PLAY	① or ② LEFT RIGHT	mV-meter	Check	limits see fig.1

* For Dolby version only

\# For Auto-reverse version only

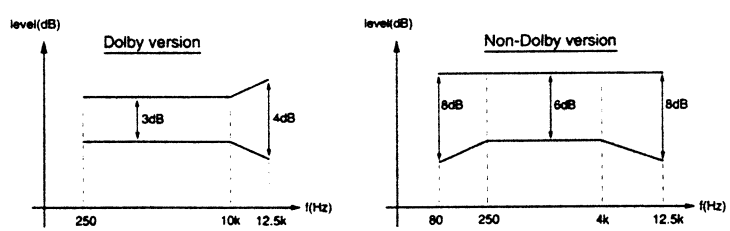


figure. 1

Recording

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
PRE-ADJUST BIAS AND BIAS-SYMMETRY						
DECK B	CrO_2	RECORD	◇5 LEFT or ◇6 RIGHT	mV-meter	3773	995mV
					3785 *	left = right
	FERRO				check only	750mV ± 1.5dB
CHECK OVERALL FREQUENCY RESPONSE AND DISTORTION						
Inject 3mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via ◇3 or ◇4	CrO_2	RECORD				
	RECORDED CASSETTE	PLAY	◇1 LEFT or ◇2 RIGHT	mV-meter	check only	limits see fig.2
Inject 1kHz 8.85mV via ◇3 or ◇4	CrO_2	RECORD				
	RECORDED CASSETTE	PLAY	◇1 LEFT or ◇2 RIGHT	THD-meter	check only	≤3%
Remark: If high frequencies are not within limits, decrease bias and re-measure. If distortion is too high increase bias and re-measure.						
ADJUST DOLBY RECORD LEVEL *						
Inject 400Hz 8.85mV via ◇3 or ◇4	CrO_2	RECORD	◇9 LEFT or ◇10 RIGHT	mV-meter	3655 & 3556	420mV
	RECORDED CASSETTE	PLAY	◇7 LEFT or ◇8 RIGHT	mV-meter	check	170mV ± 1dB
Remark: If measured value is out, re-adjust record level up or down slightly to attain play level.						

* For Dolby version only

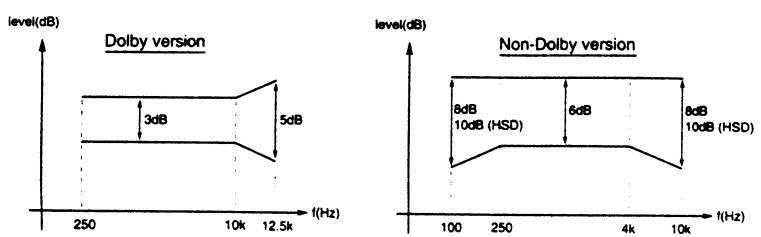
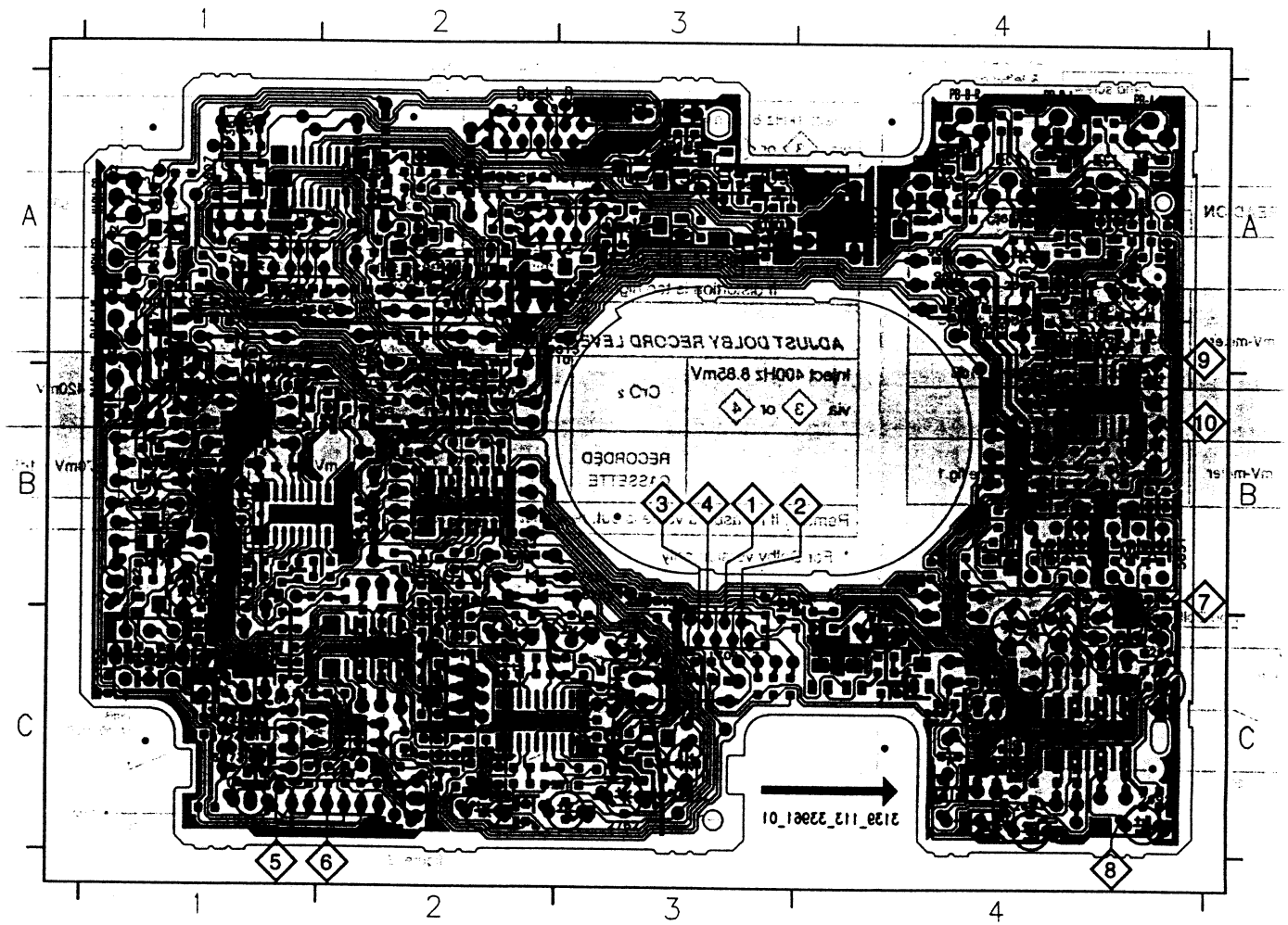


figure. 2

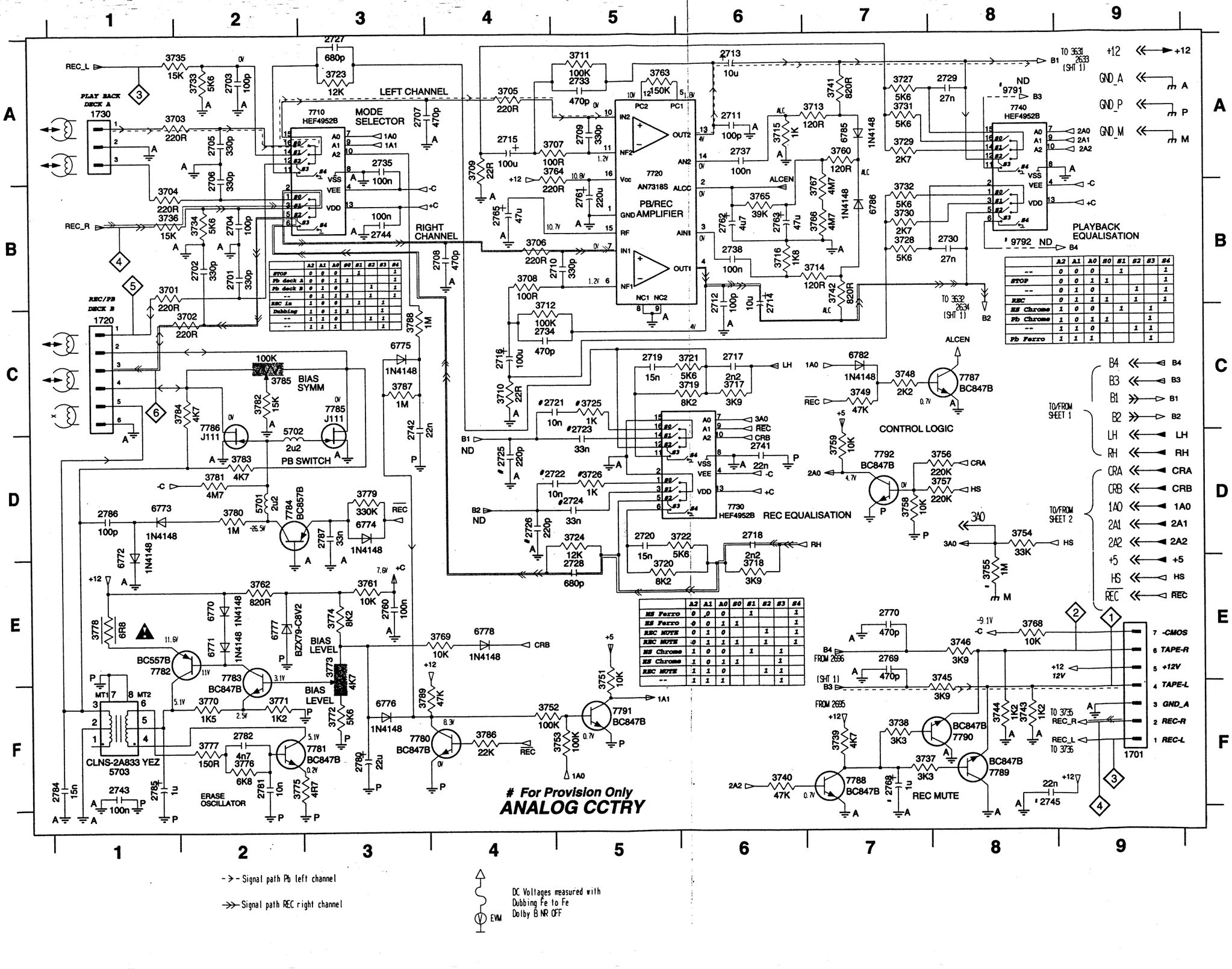
COMPONENT LAYOUT

1701	C3	2642	A4	2714	C3	2784	C1	3642	A4	3764	C3	6612	A4	6777	B1	9603	A4	9613	C4	9707	A2	9717	B2	9727	C2
1703	A3	2647	B4	2715	C2	2785	B1	3652	B4	3773	A1	6613	A3	6778	B1	9604	A4	9614	C4	9708	A2	9718	B2	9728	C3
1706	A1	2648	B4	2716	C2	3607	A1	3655	A4	3778	B1	6614	A1	6782	B2	9605	B4	9615	C4	9709	A2	9719	B2	9791	B2
1720	C2	2691	C4	2741	C1	3609	A1	3656	A4	3785	B1	6770	B1	6785	B3	9606	B4	9616	C4	9710	A2	9720	B2	9792	B2
1730	C2	2692	C4	2761	C3	3611	A1	3674	A2	5631	B4	6771	B1	6786	B3	9607	B4	9617	C4	9711	A2	9721	B2	9793	A2
1740	A3	2693	C4	2762	C3	3620	A1	3685	A1	5632	B4	6772	C1	7782	B1	9608	B4	9702	A2	9712	A1	9722	B2		
1750	A2	2694	B4	2763	C3	3622	A1	3690	A2	5701	C2	6773	C1	7785	C1	9609	B4	9703	A2	9713	B1	9723	C1		
2637	C4	2695	C4	2765	C3	3635	A4	3693	B4	5702	C2	6774	C1	7786	C2	9610	C4	9704	A2	9714	B1	9724	C1		
2638	C4	2696	C4	2768	B4	3636	A4	3694	C4	5703	C1	6775	A1	9601	A4	9611	C4	9705	A3	9715	B1	9725	C2		
2641	A4	2713	C3	2780	A1	3641	A4	3761	B1	6611	A3	6776	A1	9602	A4	9612	C4	9706	A1	9716	B2	9726	C2		



9-7

ANALOG CIRCUIT



	1	2	3	4	5	6	7	8	9
1701	F9								
1720	C1								
1730	A1								
2701	B2								
2702	B2								
2703	A2								
2704	B2								
2705	A2								
2706	A2								
2707	A3								
2708	B4								
2709	A5								
2710	B5								
2711	A6								
2712	B6								
2713	A6								
2714	B6								
2715	A4								
2716	C4								
2717	C6								
2718	D6								
2719	C5								
2720	D5								
2721	C5								
2722	D5								
2723	C5								
2724	D5								
2725	D4								
2726	D4								
2727	A3								
2728	E5								
2729	A8								
2730	B8								
2733	A5								
2734	C4								
2735	A3								
2737	A6								
2738	B6								
2741	D6								
2742	C3								
2743	F1								
2744	B3								
2745	F9								
2760	E3								
2761	B5								
2762	B6								
2763	B6								
2765	B4								
2768	F7								
2769	E7								
2770	E7								
2780	F3								
2781	F2								
2782	F2								
2784	F1								
2785	F1								
2786	D1								
2787	D3								
3701	B1								
3702	C2								
3703	A2								
3704	B1								
3705	A4								
3706	B4								
3707	A5								
3708	B4								
3709	A4								
3710	C4								
3711	A5								
3712	C4								
3713	A7								
3714	B7								
3715	A6								
3716	B6								
3717	C6								
3718	E6								
3719	C6								
3720	E5								
3721	C6								
3722	D6								
3723	A3								
3724	D5								
3725	C5								
3726	D5								
3727	A7								
3728	B7								
3729	A7								
3730	B7								
3731	A7								
3732	B7								
3733	A2								
3734	B2								
3735	A2								
3736	B1								
3737	F7								
3738	F7								
3739	F7								
3740	F6								
3741	A7								
3742	B7								
3743	F8								
3744	F8								
3745	E8								
3746	E8								
3748	C7								
3749	C7								
3751	E5								
3752	F4								
3753	F5								
3754	D8								
3755	E8								
3756	D8								
3757	D8								
3758	D7								
3759	D7								
3760	A7								
3761	E3								
3762	E2								
3763	A5								
3764	A5								
3765	B6								
3766	B7								
3767	B7								
3768	E8								
3769	E4								
3770	F2								
3771	F2								
3772	F3								
3773	E3								
3774	E3								
3775	F2								
3776	F2								
3777	F2								
3778	E1								
3779	D3								
3780	D2								
3781	D2								
3782	C2								
3783	D2								
3784	C2								
3785	C2								
3786	F4								
3787									
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3789									
5701									
5702									
5703									
6770									
6771									
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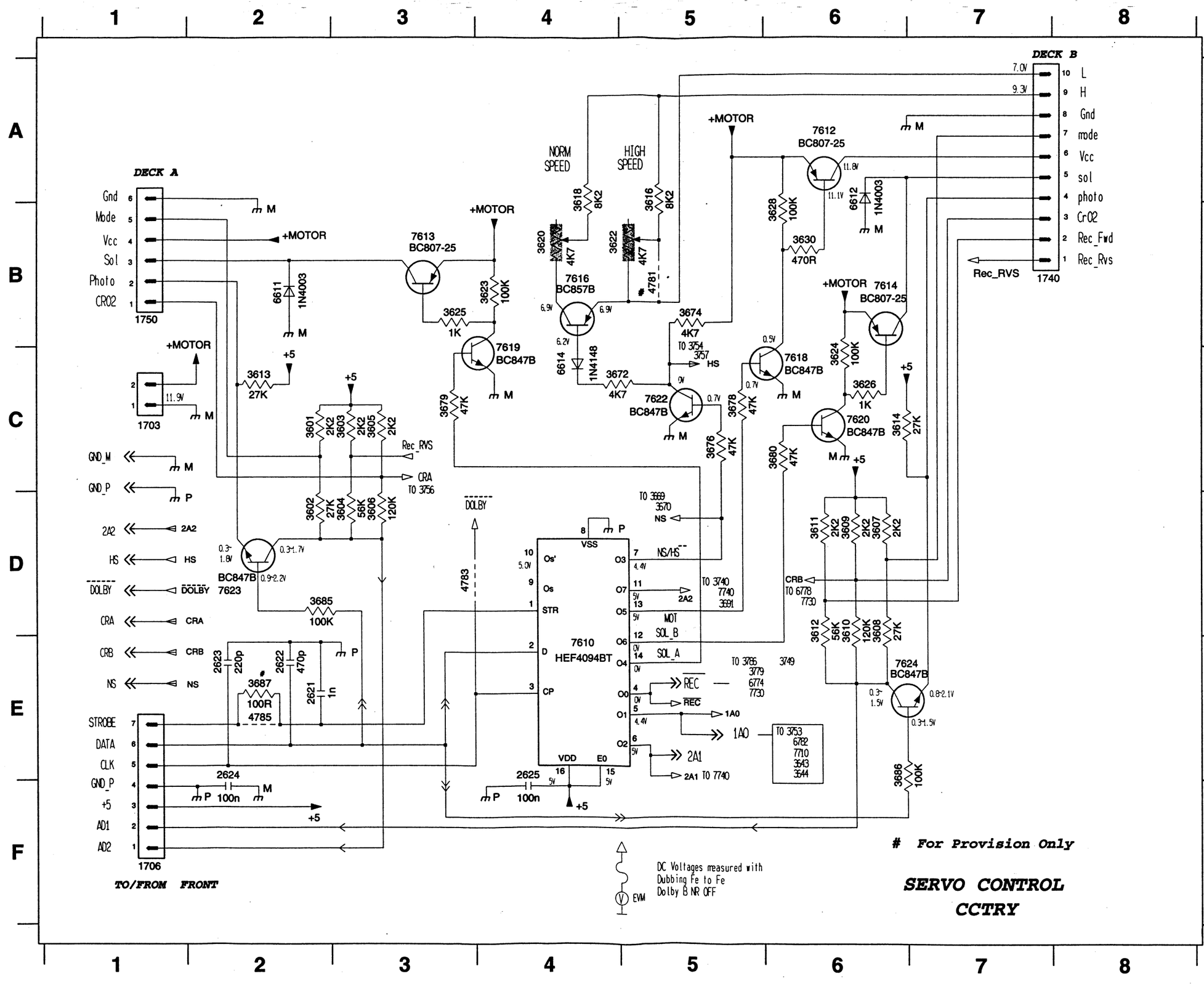
9792									

9-8

SERVO CONTROL CIRCUIT



1703 C1
1706 F1
1740 B8
1750 B1
2621 E2
2622 E2
2623 E2
2624 E2
2625 E4
3601 C2
3602 D2
3603 C3
3604 D3
3605 C3
3606 D3
3607 D6
3608 D6
3609 D6
3610 D6
3611 D6
3612 D6
3613 C2
3614 C6
3616 A5
3618 A4
3620 B4
3622 B4
3623 B4
3624 C6
3625 B3
3626 C6
3628 B6
3630 B6
3672 C4
3674 B5
3676 C5
3678 C5
3679 C3
3680 C6
3685 D2
3686 E6
3687 E2
4781 B5
4783 D3
4785 E2
6611 B2
6612 A6
6614 C4
7610 E4
7612 A6
7613 B3
7614 B6
7616 B4
7618 C6
7619 C4
7620 C6
7622 C5
7623 D2
7624 E6

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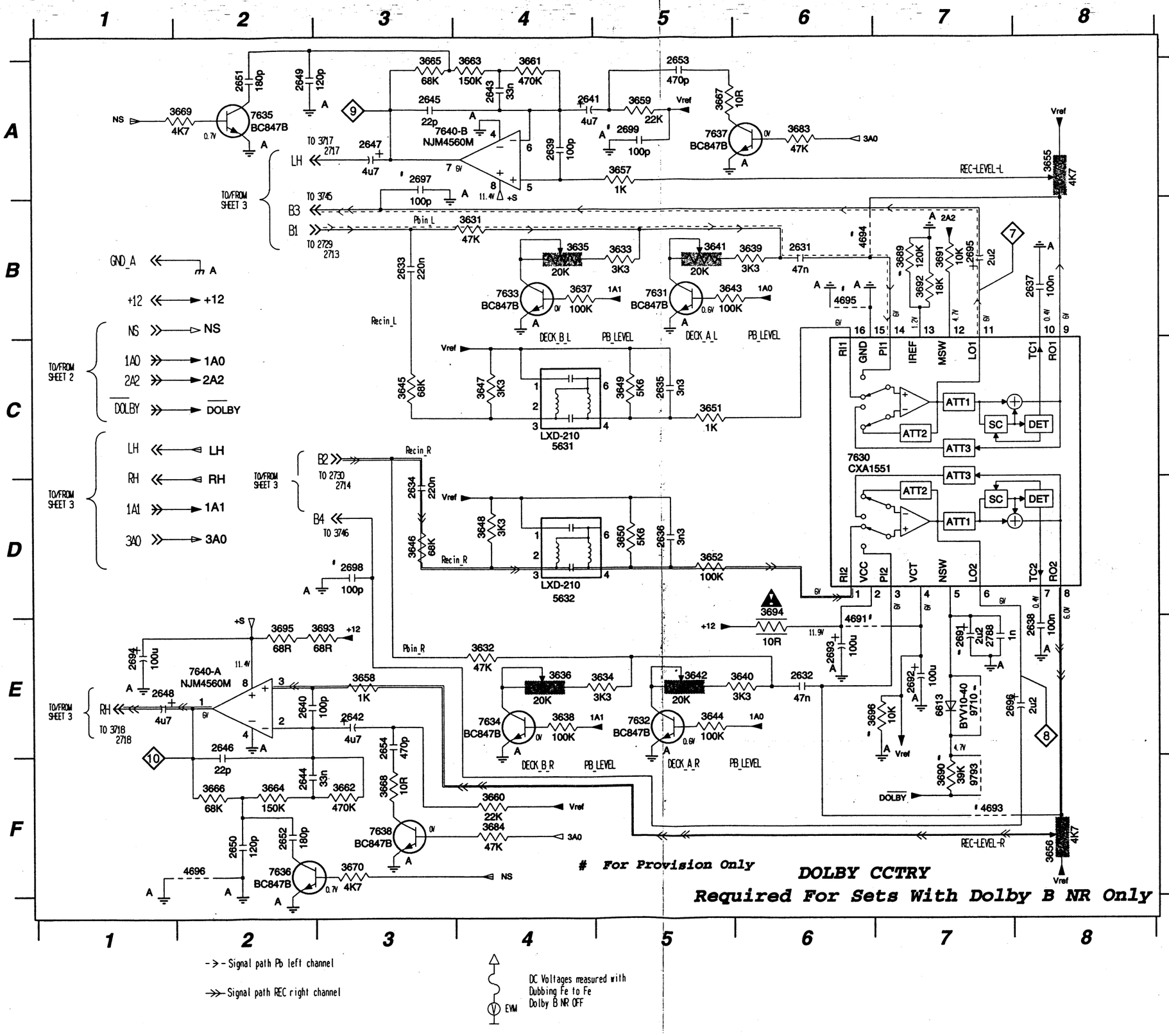
DOLBY CIRCUIT



2631 B6
2632 E6
2633 B3
2634 D3
2635 C5
2636 D5
2637 B8
2638 E8
2639 A4
2640 E2
2641 A4
2642 E3
2643 A4
2644 F2
2645 A3
2646 E2
2647 A3
2648 E1
2649 A2
2650 F2
2651 A2
2652 F2
2653 A5
2654 E3
2691 E7
2692 E7
2693 E6
2694 E1
2695 B7
2696 E7
2697 A3
2698 D3
2699 A5
2788 E7
3631 B4
3632 E4
3633 B5
3634 E5
3635 B4
3636 E4
3637 B4
3638 E4
3639 B6
3640 E6
3641 B5
3642 E5
3643 B5
3644 E5
3645 C3
3646 D3
3647 C4
3648 D4
3649 C5
3650 D5
3651 C5
3652 D5
3655 A8
3656 F8
3657 A5
3658 E3
3659 A5
3660 F4
3661 A4
3662 F3
3663 A4
3664 F2
3665 A3
3666 F2
3667 A5
3668 F3
3669 A2
3670 F3
3683 A6
3684 F4
3689 B7
3690 F7
3691 B7
3692 B7
3693 E3
3694 D6
3695 E2
3696 E6
4691 E6
4693 F7
4694 B6
4695 B6
4696 F2
5631 C4
5632 D4
6613 E7
7630 C6
7631 B5
7632 E5
7633 B4
7634 E4
7635 A2
7636 F2
7637 A5
7638 F3
7640-A E2
7640-B A4
9710 E7
9793 F7

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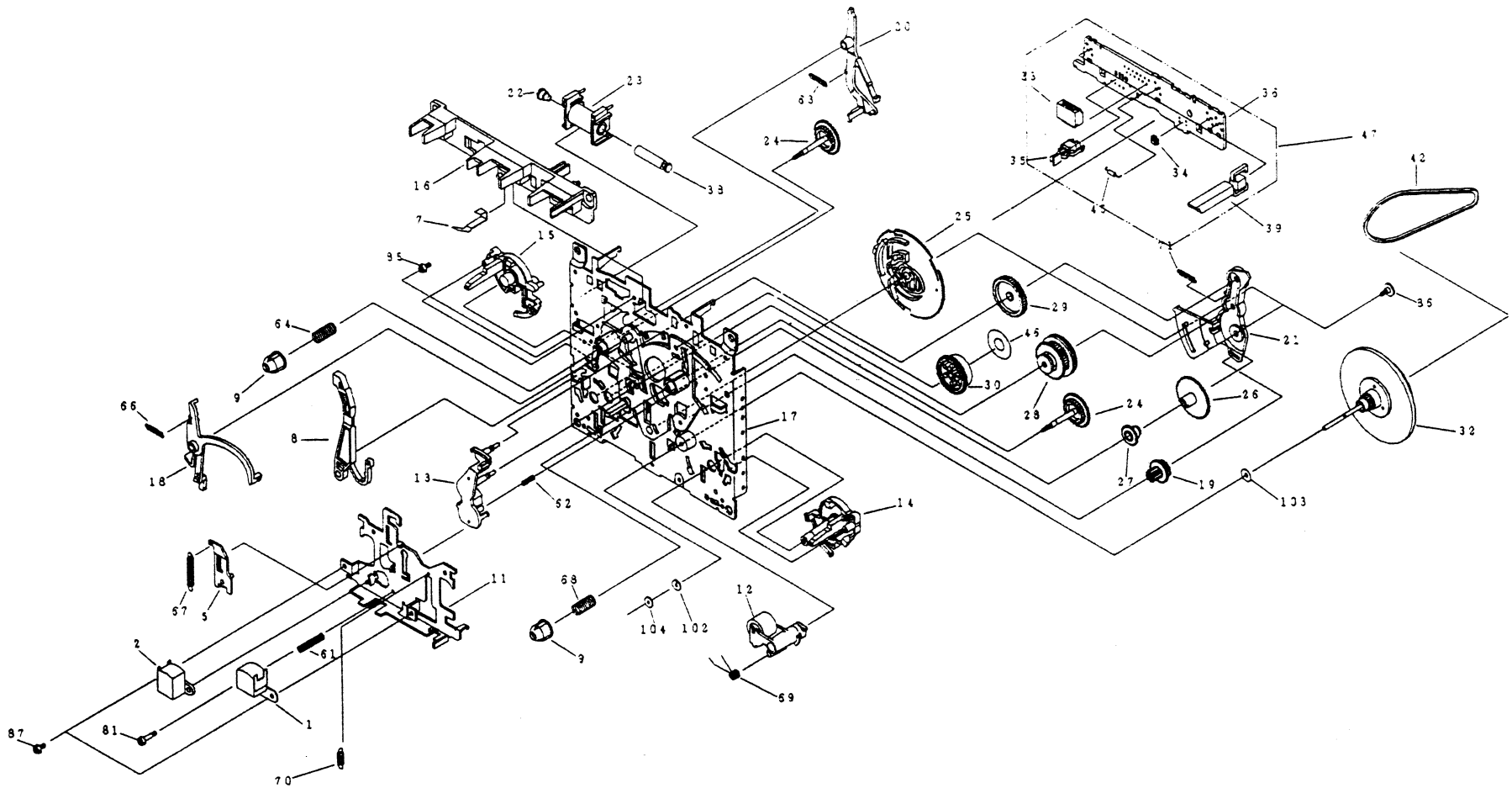
TAPE MECHANISM A - PLAY



MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10397	MS15RAA2N1	45	4822 050 16801	680R 1% 0,4w
2	4822 249 30146	Dummy Head	69	4822 492 11542	Spring
12	4822 528 10974	Assembly Arm Pinch R	102	4822 532 12931	Washer
23	4822 281 11069	Solenoid	103	4822 532 12932	Washer
32	4822 528 11209	Assembly Flywheel RV	104	4822 532 12933	Washer
33	4822 265 11207	Connector Socket 6 pin			
34	4822 130 10205	Photo Sensor			
35	4822 276 13946	Mode Switch			
39	4822 278 90613	Leaf Switch			
42	4822 358 10168	Belt AF 40mm			

Note: Only the parts mentioned in this list are normal service spare parts.

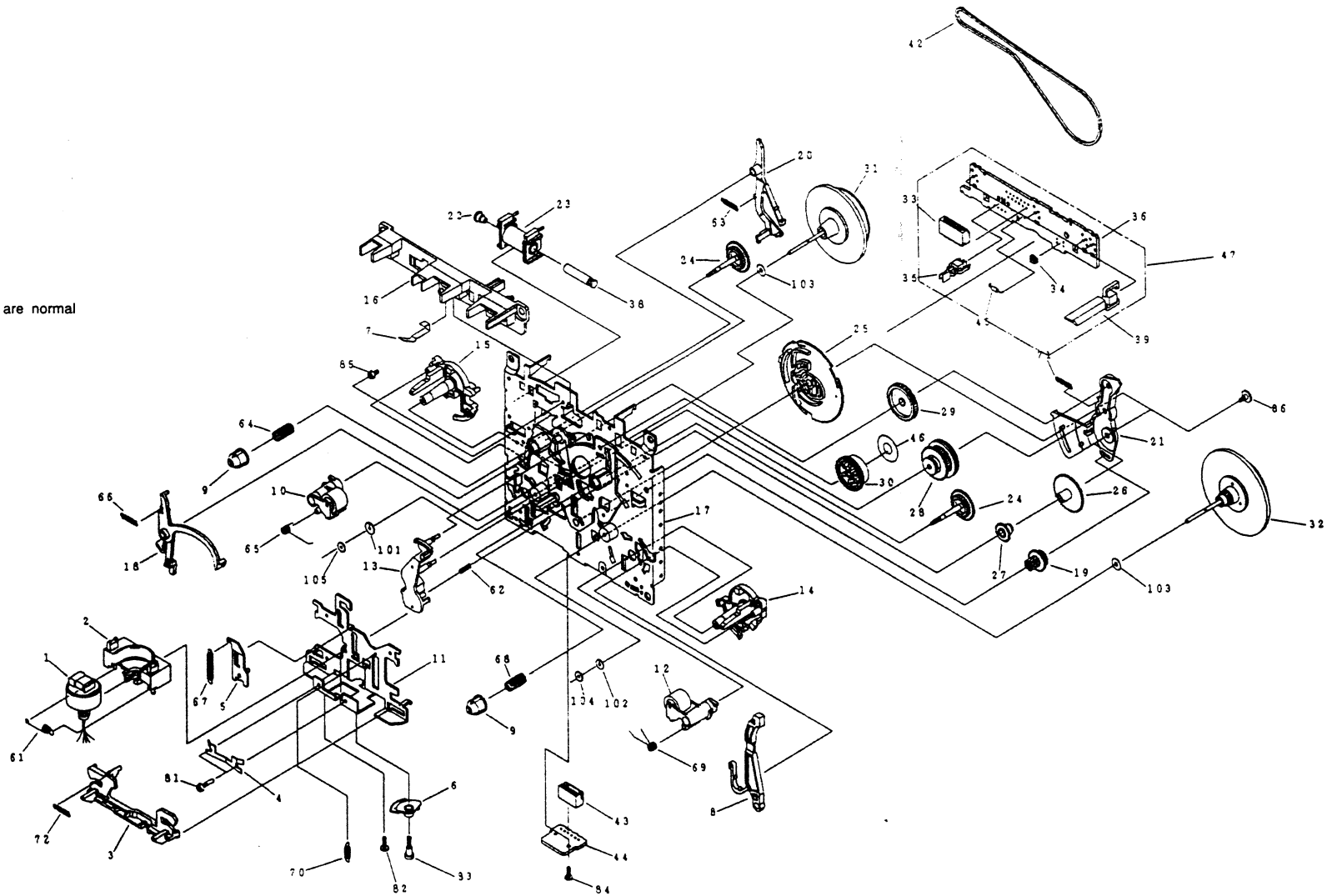
9-11

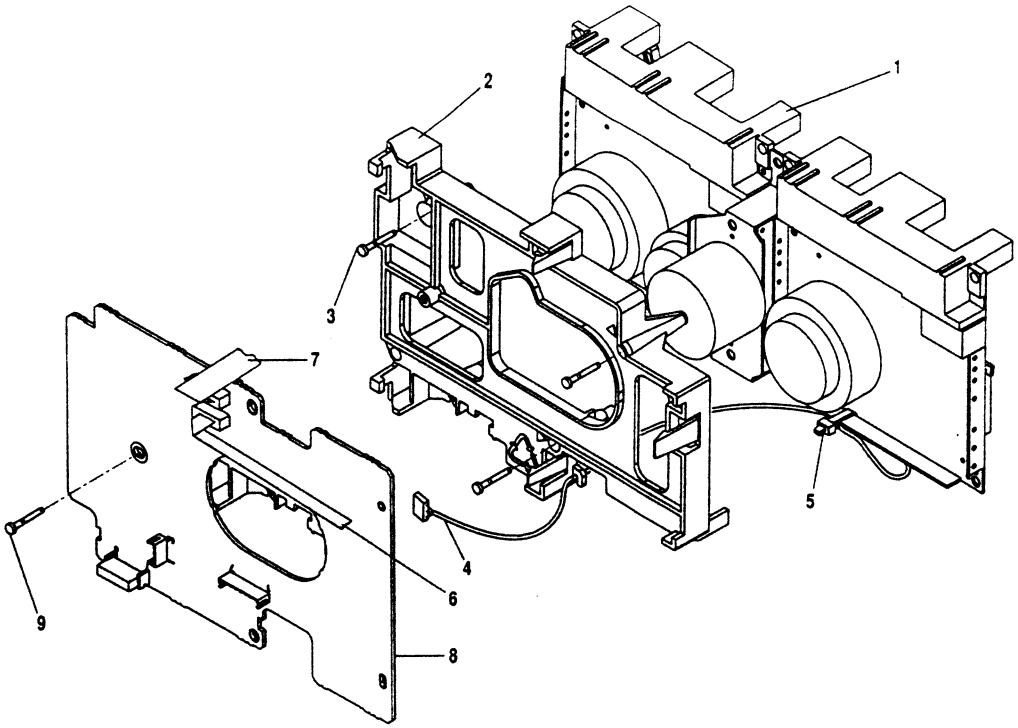
TAPE MECHANISM B - RECORD/PLAYBACK

MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10521	Record/Playback Head
10	4822 528 10975	Assembly Arm Pinch L
12	4822 528 10974	Assembly Arm Pinch R
23	4822 281 11069	Solenoid
31	4822 528 11211	Assembly Flywheel LV
32	4822 528 11209	Assembly Flywheel RV
33	4822 265 11208	Connector Socket 10 pin
34	4822 130 10205	Photo Sensor
35	4822 276 13946	Mode Switch
39	4822 278 90613	Leaf Switch
42	4822 358 10169	Belt
45	4822 050 16801	680R 1% 0,4w
65	4822 492 11546	Spring
69	4822 492 11542	Spring
101	4822 532 12934	Washer
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer
105	4822 532 12935	Washer

Note: Only the parts mentioned in this list are normal service spare parts.





ETF5 TAPE MODULE EXPLODED VIEW

1	4822 691 10671	Tape Mechanism CWB44FR502
3	-	Screw M2 x 16
6	4822 320 12243	Flex Cable 6 pin 18 cm
7	4822 320 12242	Flex Cable 10 pin 7,5 cm
9	-	Screw D3 x 10

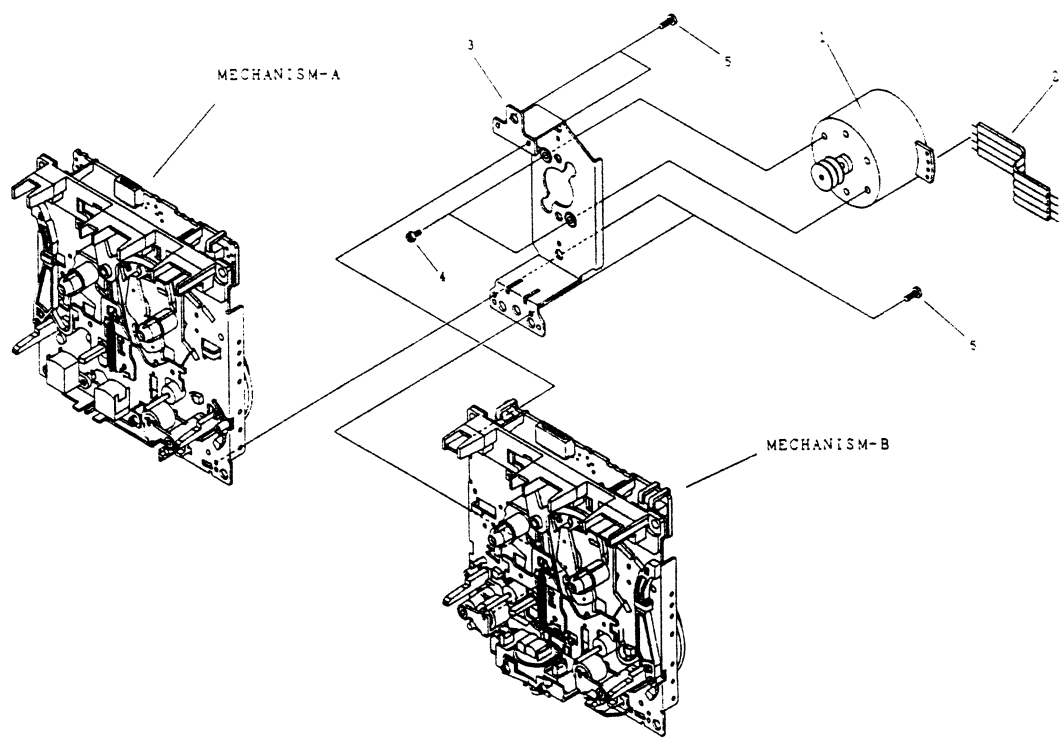
Note: Only the parts mentioned in this list are normal service spare parts.

9-12

TAPE MECHANISM A & B EXPLODED VIEW

1	4822 361 10841	Motor Assembly
4	-	Screw M2,6 x 4
5	-	Screw M2 x 3

Note: Only the parts mentioned in this list are normal service spare parts.



MISCELLANEOUS

1701	4822 267 10953	Flex Socket 7pin Vert.
1706	4822 267 10953	Flex Socket 7pin Vert.
1740	4822 267 10729	Flex Socket 10pin Vert.
1750	4822 267 10731	Flex Socket 6pin Vert.

CAPACITORS

2621	5322 122 34123	1nF 10% 50V
2622	5322 122 34099	470pF 10% 63V
2623	4822 122 33575	220pF 5% 63V
2624	4822 126 13196	100nF 10% 25V
2625	4822 126 13196	100nF 10% 25V
2631	4822 126 12944	47nF 10% 50V
2632	4822 126 12944	47nF 10% 50V
2633	4822 126 13473	220nF +80/-20% 50V
2634	4822 126 13473	220nF +80/-20% 50V
2635	4822 122 33891	3,3nF 10% 63V
2636	4822 122 33891	3,3nF 10% 63V
2637	5322 121 42386	100nF 5% 63V
2638	5322 121 42386	100nF 5% 63V
2639	5322 122 32531	100pF 5% 50V
2640	5322 122 32531	100pF 5% 50V
2641	4822 124 40769	4,7µF 20% 100V
2642	4822 124 40769	4,7µF 20% 100V
2643	4822 126 12105	33nF 5% 50V
2644	4822 126 12105	33nF 5% 50V
2645	5322 122 32658	22pF 5% 50V
2646	5322 122 32658	22pF 5% 50V
2647	4822 124 40769	4,7µF 20% 100V
2648	4822 124 40769	4,7µF 20% 100V
2649	5322 122 33861	120pF 10% 50V
2650	5322 122 33861	120pF 10% 50V
2651	4822 126 10326	180pF 5% 63V
2652	4822 126 10326	180pF 5% 63V
2653	5322 122 34099	470pF 10% 63V
2654	5322 122 34099	470pF 10% 63V
2692	4822 124 41584	100µF 20% 10V
2693	4822 124 81029	100µF 20% 25V
2694	4822 124 81029	100µF 20% 25V
2695	4822 124 41576	2,2µF 20% 50V
2696	4822 124 41576	2,2µF 20% 50V
2701	4822 122 33805	330pF 10% 63V
2702	4822 122 33805	330pF 10% 63V
2703	5322 122 32531	100pF 5% 50V
2704	5322 122 32531	100pF 5% 50V
2705	5322 122 31863	330pF 5% 63V
2706	5322 122 31863	330pF 5% 63V
2707	5322 122 34099	470pF 10% 63V
2708	5322 122 34099	470pF 10% 63V
2709	5322 122 31863	330pF 5% 63V
2710	5322 122 31863	330pF 5% 63V
2711	5322 122 32531	100pF 5% 50V
2712	5322 122 32531	100pF 5% 50V
2713	4822 124 41579	10µF 20% 50V
2714	4822 124 41579	10µF 20% 50V
2715	4822 124 41584	100µF 20% 10V
2716	4822 124 41584	100µF 20% 10V
2717	4822 122 33175	2,2nF 20% 50V
2718	4822 122 33175	2,2nF 20% 50V
2719	4822 126 13188	15nF 5% 63V
2720	4822 126 13188	15nF 5% 63V
2727	4822 122 32535	680pF 10% 63V
2728	4822 122 32535	680pF 10% 63V
2729	4822 122 32541	27nF 10% 63V
2730	4822 122 32541	27nF 10% 63V
2733	5322 122 34099	470pF 10% 63V
2734	5322 122 34099	470pF 10% 63V
2735	4822 126 13196	100nF 10% 25V
2737	4822 126 13196	100nF 10% 25V
2738	4822 126 13196	100nF 10% 25V
2741	4822 126 11585	22nF +80/-20% 25V
2742	5322 122 32654	22nF 10% 63V
2743	4822 126 13196	100nF 10% 25V
2744	4822 126 13196	100nF 10% 25V
2760	4822 126 13196	100nF 10% 25V
2761	4822 124 22263	220µF 20% 25V
2762	4822 124 40769	4,7µF 20% 100V
2763	4822 124 40433	47µF 20% 25V
2765	4822 124 40433	47µF 20% 25V
2769	5322 122 34099	470pF 10% 63V
2770	5322 122 34099	470pF 10% 63V
2780	4822 124 81151	22µF 50V
2781	4822 122 33177	10nF 20% 50V
2782	5322 126 10223	4,7nF 10% 63V
2784	4822 121 51305	15nF 10% 50V
2785	4822 124 40242	1µF 20% 63V
2786	5322 122 32531	100pF 5% 50V
2787	4822 126 12105	33nF 5% 50V
2788	5322 122 34123	1nF 10% 50V

RESISTORS

3601	4822 117 11449	2k2 1% 0,1W
3602	4822 051 20273	27k 5% 0,1W
3603	4822 117 11449	2k2 1% 0,1W
3604	4822 117 11148	56k 1% 0,1W
3605	4822 117 11449	2k2 1% 0,1W
3606	4822 051 20124	120k 5% 0,1W
3607	4822 116 52256	2k2 5% 0,5W
3608	4822 051 20273	27k 5% 0,1W
3609	4822 116 52256	2k2 5% 0,5W
3610	4822 051 20124	120k 5% 0,1W
3611	4822 116 52256	2k2 5% 0,5W
3612	4822 117 11148	56k 1% 0,1W
3613	4822 051 20273	27k 5% 0,1W
3614	4822 051 20273	27k 5% 0,1W
3616	4822 051 20822	8k2 5% 0,1W
3618	4822 051 20822	8k2 5% 0,1W
3620	5322 100 11542	Trimmer 4k7 30% 0,1W
3622	5322 100 11542	Trimmer 4k7 30% 0,1W
3623	4822 051 20104	100k 5% 0,1W
3624	4822 051 20104	100k 5% 0,1W
3625	4822 051 10102	1k 2% 0,25W
3626	4822 051 10102	1k 2% 0,25W
3628	4822 051 20104	100k 5% 0,1W
3630	4822 051 20471	470R 5% 0,1W
3631	4822 117 10834	47k 1% 0,1W
3632	4822 117 10834	47k 1% 0,1W
3633	4822 051 20332	3k3 5% 0,1W
3634	4822 051 20332	3k3 5% 0,1W
3635	4822 100 11771	Trimmer 20k 30% 0,1W
3636	4822 100 11771	Trimmer 20k 30% 0,1W
3637	4822 051 20104	100k 5% 0,1W
3638	4822 051 20104	100k 5% 0,1W
3639	4822 051 20332	3k3 5% 0,1W
3640	4822 051 20332	3k3 5% 0,1W
3641	4822 100 11771	Trimmer 20k 30% 0,1W
3642	4822 100 11771	Trimmer 20k 30% 0,1W
3643	4822 051 20104	100k 5% 0,1W
3644	4822 051 20104	100k 5% 0,1W
3645	4822 051 20683	68k 5% 0,1W
3646	4822 051 20683	68k 5% 0,1W
3647	4822 051 20332	3k3 5% 0,1W
3648	4822 051 20332	3k3 5% 0,1W
3649	4822 051 20562	5k6 5% 0,1W
3650	4822 051 20562	5k6 5% 0,1W
3651	4822 051 10102	1k 2% 0,25W
3652	4822 050 11002	1k 1% 0,4W
3655	5322 100 11542	Trimmer 4k7 30% 0,1W
3656	5322 100 11542	Trimmer 4k7 30% 0,1W
3657	4822 051 10102	1k 2% 0,25W
3658	4822 051 10102	1k 2% 0,25W
3659	4822 051 20223	22k 5% 0,1W
3660	4822 051 20223	22k 5% 0,1W
3661	4822 051 20474	470k 5% 0,1W
3662	4822 051 20474	470k 5% 0,1W
3663	4822 051 20154	150k 5% 0,1W
3664	4822 051 20154	150k 5% 0,1W
3665	4822 051 20683	68k 5% 0,1W
3666	4822 051 20683	68k 5% 0,1W
3667	4822 051 20109	10R 5% 0,1W
3668	4822 051 20109	10R 5% 0,1W
3669	4822 051 20472	4k7 5% 0,1W
3670	4822 051 20472	4k7 5% 0,1W
3672	4822 051 20472	4k7 5% 0,1W
3674	4822 116 52283	4k7 5% 0,5W
3676	4822 117 10834	47k 1% 0,1W
3678	4822 117 10834	47k 1% 0,1W
3679	4822 117 10834	47k 1% 0,1W
3680	4822 117 10834	47k 1% 0,1W
3683	4822 117 10834	47k 1% 0,1W
3684	4822 117 10834	47k 1% 0,1W
3685	4822 116 52234	100k 5% 0,5W
3686	4822 051 20104	100k 5% 0,1W
3691	4822 117 10833	10k 1% 0,1W
3692	4822 117 10965	18k 1% 0,1W
3693	4822 116 52199	68R 5% 0,5W
3694	4822 052 10109 ⚠	10R 5% 0,33W
3695	4822 117 12521	68R 1% 0,1W
3701	4822 117 11503	220R 1% 0.1W
3702	4822 117 11503	220R 1% 0.1W
3703	4822 117 11503	220R 1% 0.1W
3704	4822 117 11503	220R 1% 0.1W
3705	4822 117 11503	220R 1% 0.1W
3706	4822 117 11503	220R 1% 0.1W
3707	4822 051 20101	100R 5% 0,1W
3708	4822 051 20101	100R 5% 0,1W
3709	4822 051 20229	22R 5% 0,1W
3710	4822 051 20229	22R 5% 0,1W
3711	4822 051 20104	100k 5% 0,1W
3712	4822 051 20104	100k 5% 0,1W
3713	4822 051 20121	120R 5% 0,1W
3714	4822 051 20121	120R 5% 0,1W
3715	4822 051 10102	1k 2% 0,25W
3716	4822 051 10102	1k 2% 0,25W
3717	4822 051 20392	3k9 5% 0,1W
3718	4822 051 20392	3k9 5% 0,1W
3719	4822 051 20822	8k2 5% 0,1W
3720	4822 051 20822	8k2 5% 0,1W
3721	4822 051 20562	5k6 5% 0,1W
3722	4822 051 20562	5k6 5% 0,1W
3723	4822 117 11383	12k 1% 0,1W
3724	4822 117 11383	12k 1% 0,1W
3727	4822 051 20562	5k6 5% 0,1W
3728	4822 051 20562	5k6 5% 0,1W
3729	4822 117 12955	2k7 1% 0,1W
3730	4822 117 12955	2k7 1% 0,1W
3731	4822 051 20562	5k6 5% 0,1W
3732	4822 051 20562	5k6 5% 0,1W
3733	4822 051 20562	5k6 5% 0,1W
3734	4822 051 20562	5k6 5% 0,1W
3735	4822 051 20153	15k 5% 0,1W
3736	4822 051 20153	15k 5% 0,1W
3737	4822 051 20332	3k3 5% 0,1W
3738	4822 051 20332	3k3 5% 0,1W
3739	4822 051 20472	4k7 5% 0,1W
3740	4822 117 10834	47k 1% 0,1W
3741	4822 117 11454	820R 1% 0,1W
3742	4822 117 11454	820R 1% 0,1W
3743	4822 051 20122	1k2 5% 0,1W

RESISTORS

3744	4822 051 20122	1k2 5% 0,1W	
3745	4822 051 20392	3k9 5% 0,1W	
3746	4822 051 20392	3k9 5% 0,1W	
3748	4822 117 11449	2k2 1% 0,1W	
3749	4822 117 10834	47k 1% 0,1W	
3751	4822 117 10833	10k 1% 0,1W	
3752	4822 051 20104	100k 5% 0,1W	
3753	4822 051 20104	100k 5% 0,1W	
3754	4822 051 20333	33k 5% 0,1W	
3756	4822 117 13579	220k 1% 0,1W	
3757	4822 117 13579	220k 1% 0,1W	
3758	4822 117 10833	10k 1% 0,1W	
3759	4822 117 10833	10k 1% 0,1W	
3760	4822 051 20121	120R 5% 0,1W	
3761	4822 116 83864	10k 5% 0,5W	
3762	4822 117 11454	820R 1% 0,1W	
3763	4822 051 20154	150k 5% 0,1W	
3764	4822 116 83872	220R 5% 0,5W	
3765	4822 051 20393	39k 5% 0,1W	
3766	4822 051 20475	4M7 5% 0,1W	
3767	4822 051 20475	4M7 5% 0,1W	
3768	4822 117 10833	10k 1% 0,1W	
3769	4822 117 10833	10k 1% 0,1W	
3770	4822 117 11139	1k5 1% 0,1W	
3771	4822 051 20122	1k2 5% 0,1W	
3772	4822 051 20562	5k6 5% 0,1W	
3773	5322 100 11542	Trimmer 4k7 30% 0,1W	
3774	4822 051 20822	8k2 5% 0,1W	
3775	4822 051 20478	4R7 5% 0,1W	
3776	4822 117 11507	6k8 1% 0,1W	
3777	4822 117 10353	150R 1% 0,1W	
3778	4822 052 10688	⚠ 6R8 5% 0,33W	
3779	4822 051 20334	330k 5% 0,1W	
3780	4822 051 20105	1M 5% 0,1W	
3781	4822 051 20475	4M7 5% 0,1W	
3782	4822 051 20153	15k 5% 0,1W	
3783	4822 051 20472	4k7 5% 0,1W	
3784	4822 051 20472	4k7 5% 0,1W	
3785	5322 100 11539	Trimmer 100k 30% 0,1W	
3786	4822 051 20223	22k 5% 0,1W	
3787	4822 051 20105	1M 5% 0,1W	
3788	4822 051 20105	1M 5% 0,1W	
3789	4822 117 10834	47k 1% 0,1W	
4601	4822 051 20008	0R Jumper 0805	
4602	4822 051 20008	0R Jumper 0805	
4603	4822 051 20008	0R Jumper 0805	
4604	4822 051 20008	0R Jumper 0805	
4605	4822 051 20008	0R Jumper 0805	
4606	4822 051 20008	0R Jumper 0805	
4607	4822 051 20008	0R Jumper 0805	
4608	4822 051 20008	0R Jumper 0805	
4610	4822 051 20008	0R Jumper 0805	
4696	4822 051 20008	0R Jumper 0805	
4697	4822 051 20008	0R Jumper 0805	
4701	4822 051 20008	0R Jumper 0805	
4702	4822 051 20008	0R Jumper 0805	
4703	4822 051 20008	0R Jumper 0805	
4704	4822 051 20008	0R Jumper 0805	
4705	4822 051 20008	0R Jumper 0805	
4706	4822 051 20008	0R Jumper 0805	
4707	4822 051 20008	0R Jumper 0805	
4708	4822 051 20008	0R Jumper 0805	
4709	4822 051 20008	0R Jumper 0805	
4710	4822 051 20008	0R Jumper 0805	
4711	4822 051 20008	0R Jumper 0805	
4712	4822 051 20008	0R Jumper 0805	
4713	4822 051 20008	0R Jumper 0805	
4714	4822 051 20008	0R Jumper 0805	
4715	4822 051 20008	0R Jumper 0805	
4716	4822 051 20008	0R Jumper 0805	
4717	4822 051 20008	0R Jumper 0805	
4718	4822 051 20008	0R Jumper 0805	
4719	4822 051 20008	0R Jumper 0805	
4720	4822 051 20008	0R Jumper 0805	
4721	4822 051 20008	0R Jumper 0805	
4722	4822 051 20008	0R Jumper 0805	
4723	4822 051 20008	0R Jumper 0805	
4724	4822 051 20008	0R Jumper 0805	
4725	4822 051 20008	0R Jumper 0805	
4726	4822 051 20008	0R Jumper 0805	
4727	4822 051 20008	0R Jumper 0805	
4728	4822 051 20008	0R Jumper 0805	
4729	4822 051 20008	0R Jumper 0805	
4730	4822 051 20008	0R Jumper 0805	
4731	4822 051 20008	0R Jumper 0805	
4732	4822 051 20008	0R Jumper 0805	
4733	4822 051 20008	0R Jumper 0805	
4734	4822 051 20008	0R Jumper 0805	
4735	4822 051 20008	0R Jumper 0805	
4736	4822 051 20008	0R Jumper 0805	
4737	4822 051 20008	0R Jumper 0805	
4738	4822 051 20008	0R Jumper 0805	
4739	4822 051 20008	0R Jumper 0805	
4740	4822 051 20008	0R Jumper 0805	
4741	4822 051 20008	0R Jumper 0805	
4742	4822 051 20008	0R Jumper 0805	
4743	4822 051 20008	0R Jumper 0805	
4783	4822 051 20008	0R Jumper 0805	
4785	4822 051 20008	0R Jumper 0805	

COILS & FILTERS

5631	4822 157 11865	MPX Filter 20kHz
5632	4822 157 11865	MPX Filter 20kHz
5701	4822 157 11477	Coil 2,2µH 5%
5702	4822 157 11477	Coil 2,2µH 5%
5703	4822 156 20946	Osc. Coil 100kHz

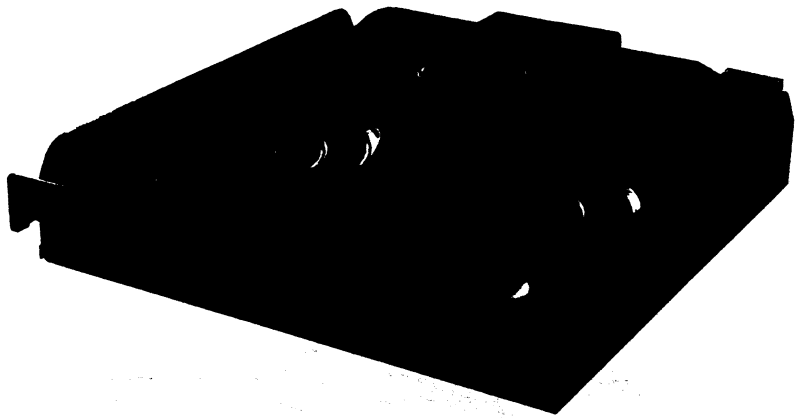
DIODES

6611	4822 130 31878	1N4003G
6612	4822 130 31878	1N4003G
6613	4822 130 32245	BYV10-40
6614	4822 130 30621	1N4148
6770	4822 130 30621	1N4148
6771	4822 130 30621	1N4148
6772	4822 130 30621	1N4148
6773	4822 130 30621	1N4148
6774	4822 130 30621	1N4148
6775	4822 130 30621	1N4148
6776	4822 130 30621	1N4148
6777	4822 130 34382	BZX79-B8V2
6778	4822 130 30621	1N4148
6782	4822 130 30621	1N4148
6785	4822 130 30621	1N4148
6786	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7610	5322 209 11306	HEF4094BT
7612	5322 130 60845	BC807-25
7613	5322 130 60845	BC807-25
7614	5322 130 60845	BC807-25
7616	5322 130 60508	BC857B
7618	4822 130 60511	BC847B
7619	4822 130 60511	BC847B
7620	4822 130 60511	BC847B
7622	4822 130 60511	BC847B
7623	4822 130 60511	BC847B
7624	4822 130 60511	BC847B
7630	4822 209 17322	CXA1551M
7631	4822 130 60511	BC847B
7632	4822 130 60511	BC847B
7633	4822 130 60511	BC847B
7634	4822 130 60511	BC847B
7635	4822 130 60511	BC847B
7636	4822 130 60511	BC847B
7637	4822 130 60511	BC847B
7638	4822 130 60511	BC847B
7640	4822 209 83357	NJM4560M
7710	4822 209 32919	HEF4952BT
7720	4822 209 32918	AN7318S
7730	4822 209 32919	HEF4952BT
7740	4822 209 32919	HEF4952BT
7780	4822 130 60511	BC847B
7781	4822 130 60511	BC847B
7782	4822 130 44568	BC557B
7783	4822 130 60511	BC847B
7784	5322 130 60508	BC857B
7785	4822 130 63494	J111
7786	4822 130 63494	J111
7787	4822 130 60511	BC847B
7788	4822 130 60511	BC847B
7789	4822 130 60511	BC847B
7790	4822 130 60511	BC847B
7791	4822 130 60511	BC847B
7792	4822 130 60511	BC847B

Note: Only the parts mentioned in this list are normal service spare parts.



3CDC 99 Module

(3 Disc Carrousel Changer)

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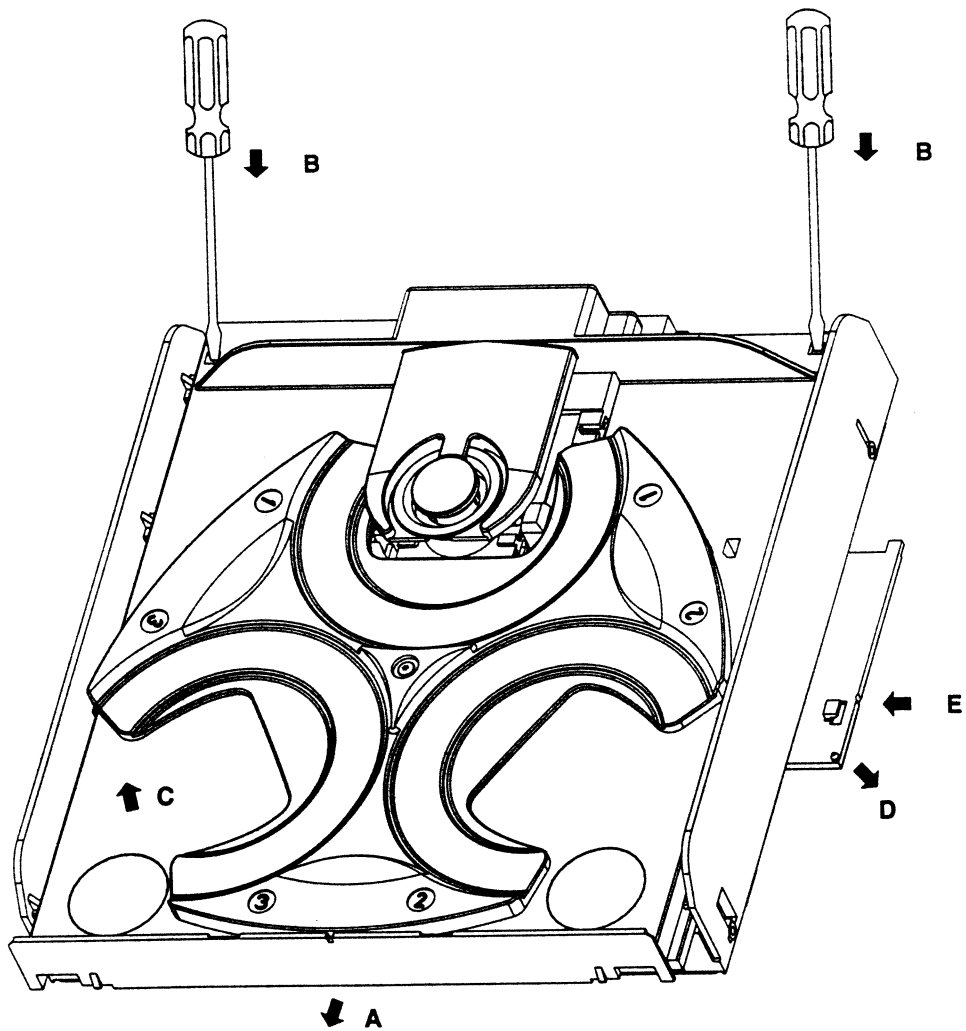
Demounting Hints



Demounting of Drawer

→ **A** Pull drawer outwards
→ **B** Unlock drawer with screwdriver
→ **C** Lift drawer to demount from chassis

Demounting of Flex Plate

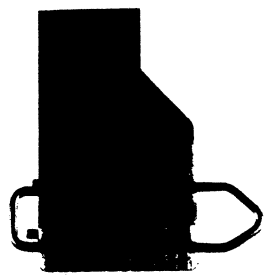
→ **D** Lift plate to unlock pin from bottom plate
→ **E** Move plate inwards to demount from bottom plate

Servicing Hints

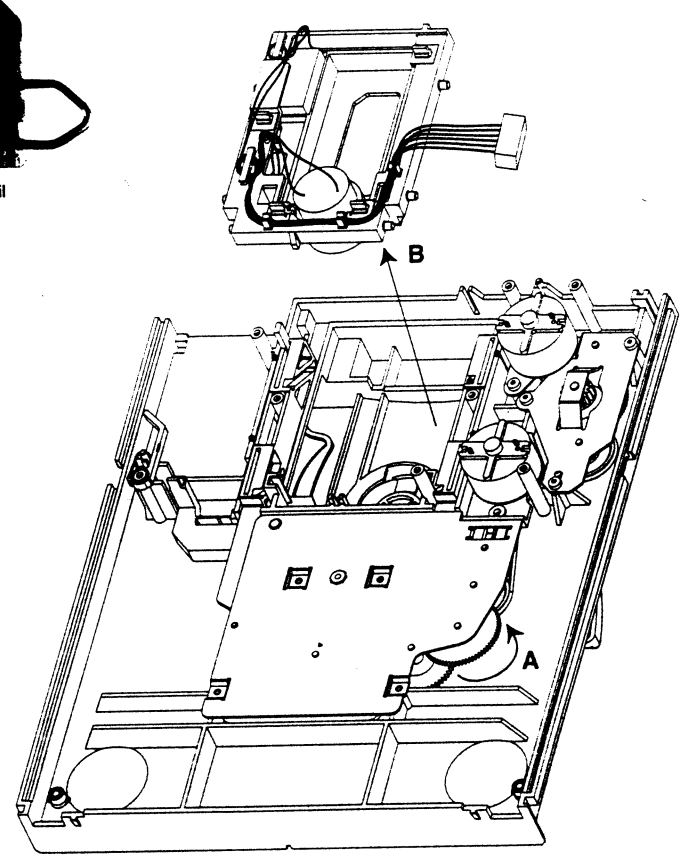
Replacement of CD Drive

See also exploded view of changer mechanism.

1. Demount printed circuit board: remove 5 screws.
2. Disconnect flexfoil and JST connector of CD drive from Printed circuit board. Shortcircuit the flexfoil with a paperclip to protect the laser against ESD.
3. Remove 2 screws (pos 107,108) and demount CD drive lockings (pos 105,106).
4. Turn gearwheel (pos 42) of disc change mechanism by finger to move CD drive support in upper position as shown in picture below Ⓐ.
5. Demount CD drive support (pos 95) Ⓑ.
6. Replace CD drive (pos 100). The wire tree of JST connector has to be desoldered and resoldered on the new CD drive again.



CD drive flex foil

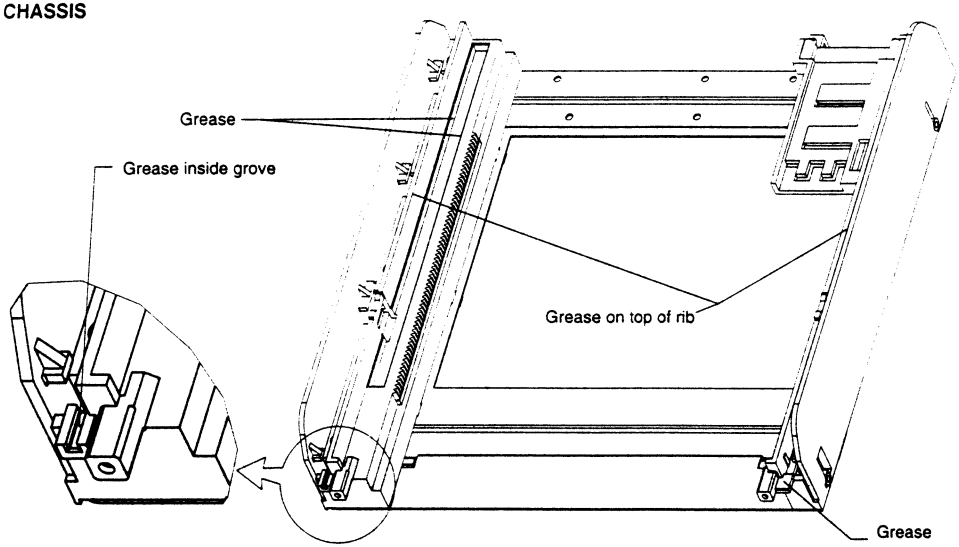


Mounting of Carrousel

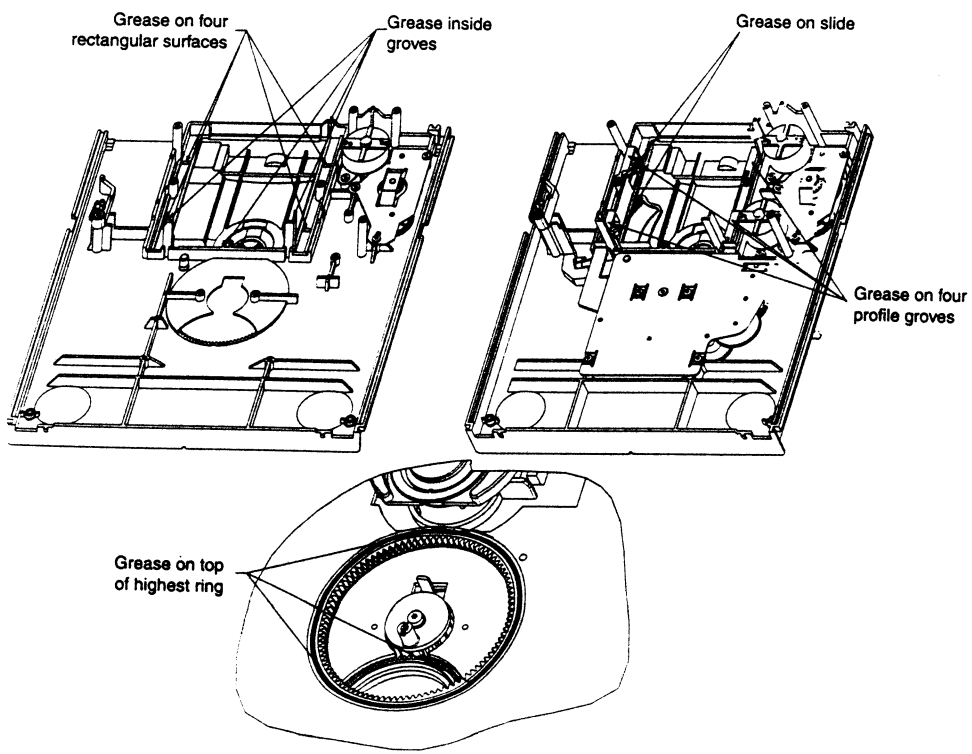
1. Turn gearwheel (pos 42) of disc change mechanism by finger until CD drive is in play position.
2. Mount carrousel (pos 115) so that disc is positioned right on turntable. Carrousel position number doesn't matter.

Lubrication Instructions

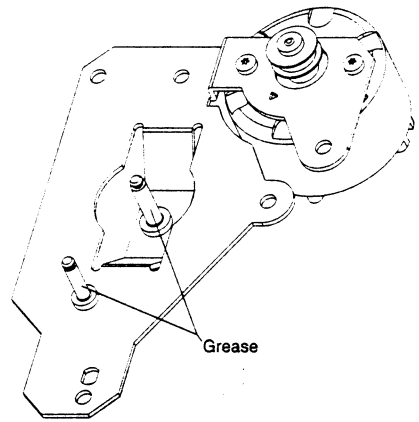
CHASSIS



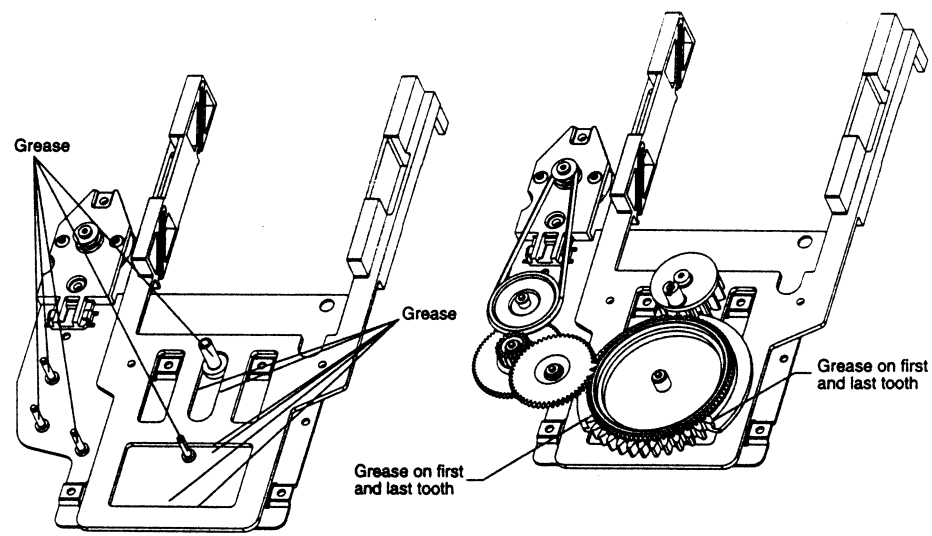
DRAWER


Grease on four rectangular surfaces
Grease inside groves
Grease on slide
Grease on four profile groves
Grease on top of highest ring

DRAWER MECHANISM



DISC CHANGE MECHANISM



Use only grease **Polylub GLY 801** service codenumber 4822 390 10136

WARNING

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE
- ***SWITCH OFF POWER SUPPLY***
- ***ESD PROTECTION***

ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CDM mechanism:
1. Disconnect old CD drive flexfoil from printed board
2. Connect paperclip to CD drive flexfoil to short-circuit flexfoil (fig.1)
3. Short-circuit printed board with **brass-sheet (4822 321 11197)** plugged into the flexfoil connector (fig.2)
4. Remove old CD drive mechanism
5. Position new CD mechanism in its studs
6. Remove short-circuit from printed board connector
7. Remove short-circuit from flexfoil of new CD drive
8. Connect new flexfoil to print connector (fig.3)

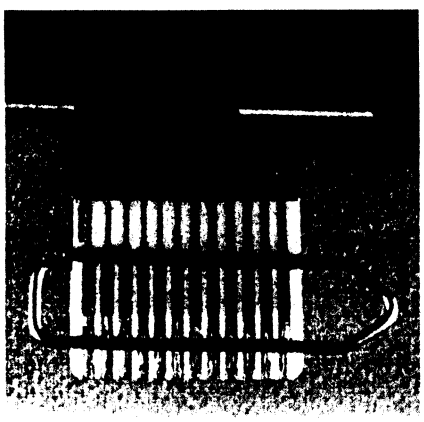


fig.1

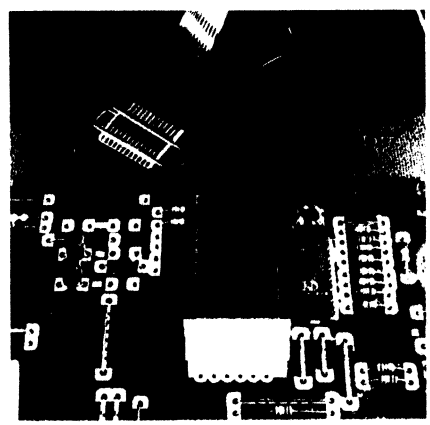


fig.2

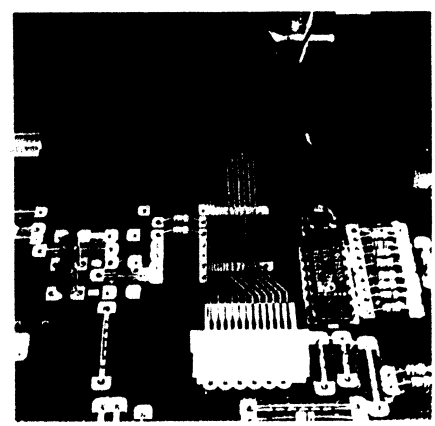
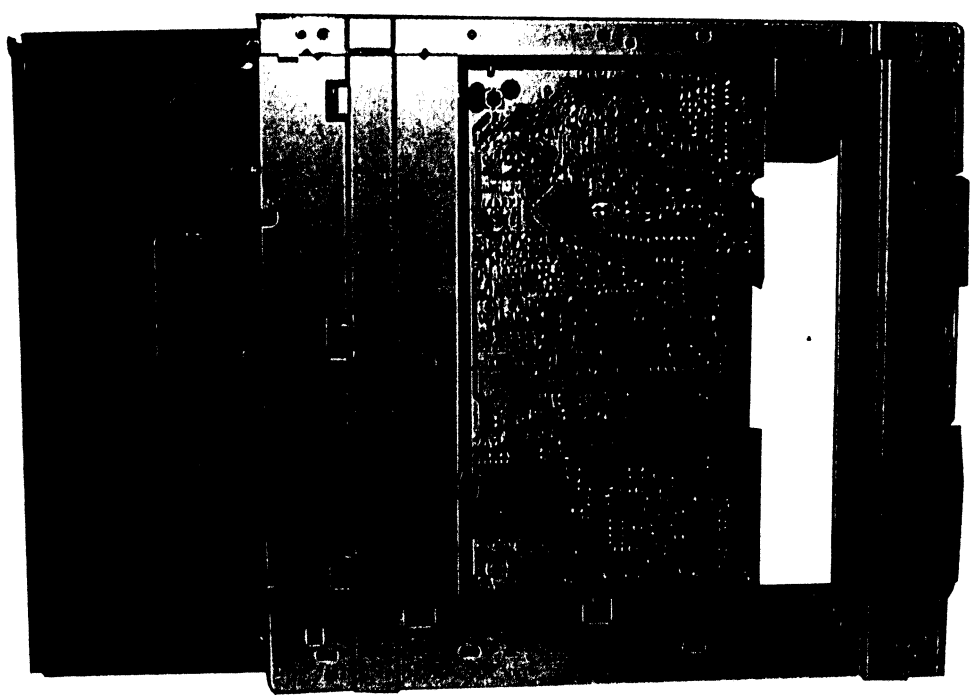
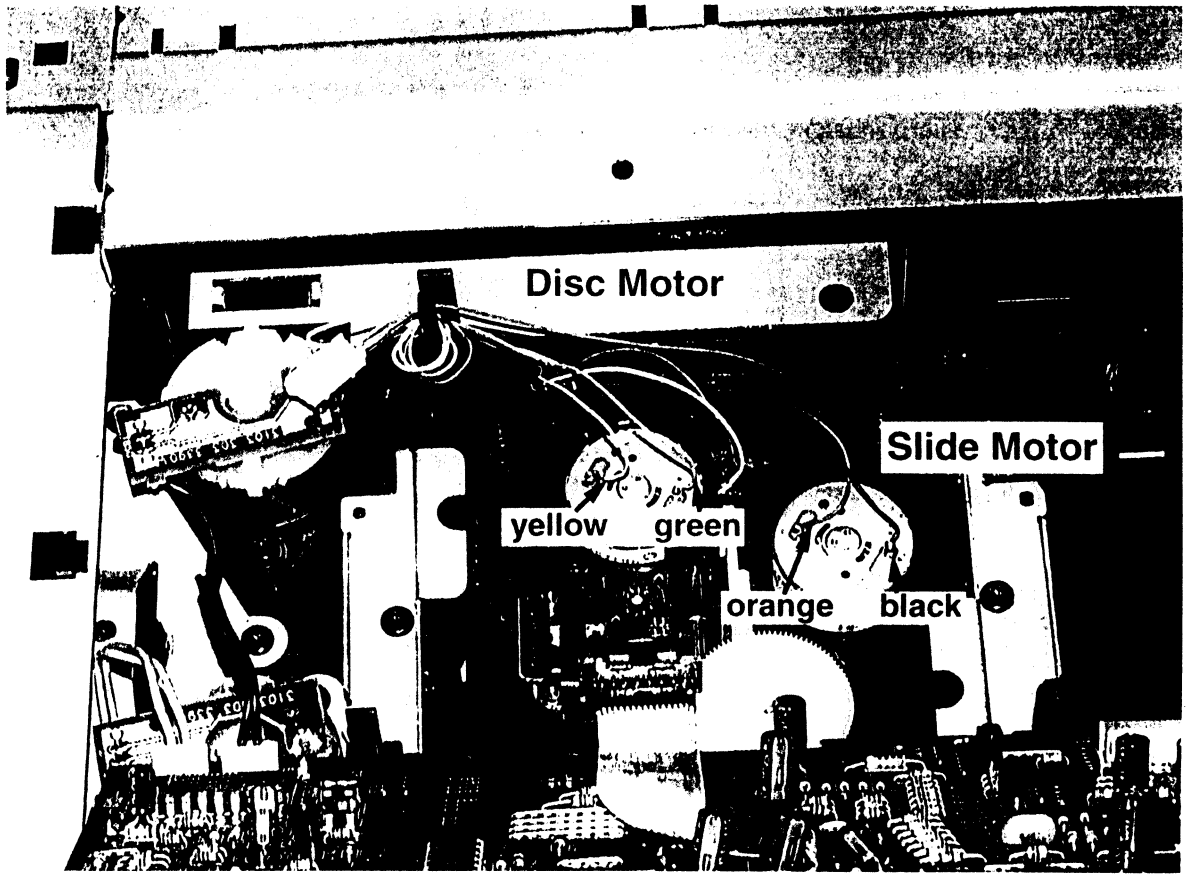


fig.3

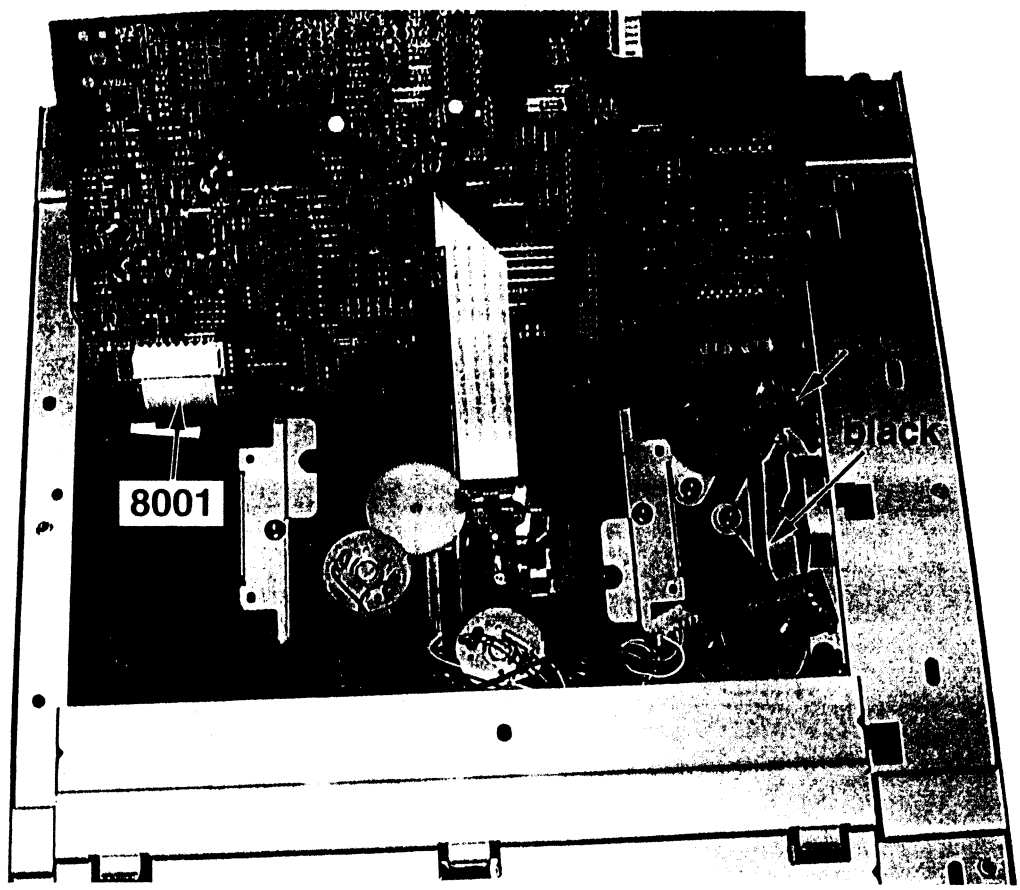
Service Position



Wiring of CD Drive



Pict. 1



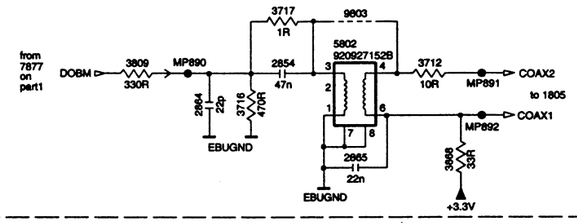
Pict. 2

10-11

1805 H14	2804 G4	2853 G4	2863 B8	2872 F10	2881 F8	3707 G4	3715 G8	3740 A7	3750 B7	3855 B11	3868 C4	3877 E11	3883 E6	3890 F11	5803 E4	6874 G7	7805-B B10	7876 G3	9835 G11
1876 E3	2829 E6	2854 C3	2864 C2	2873 E6	2882 B10	3708 H4	3716 C3	3741 A7	3751 C7	3858 A11	3871 E11	3878 D7	3884 E6	3891 F11	5804 E4	6875 E12	7812 G8	9801 E8	9838 D14
1878 F3	2830 C10	2858 A10	2865 C3	2875 F6	2893 F12	3711 G4	3717 B3	3742 B7	3809 C2	3859 B11	3872 B13	3879 E7	3885 D6	3893 F11	5805 C11	6876 C13	7871 D5	9803 B3	9839 C14
1880 D8	2831 B9	2860 A11	2867 A9	2876 C8	3700 H2	3712 C4	3718 G3	3743 B7	3814 C12	3860 B8	3874 B13	3880 F6	3886 F7	3896 G10	6871 D8	6877 D12	7873 D9	9813 G14	9876 C13
1881 D8	2832 A8	2861 B11	2870 E3	2877 F11	3705 G4	3713 F8	3730 G2	3744 A9	3851 E6	3861 B8	3875 C12	3881 F7	3887 E12	3899 D12	6872 D8	6878 E8	7874 C12	9827 G14	9898 D4
1882 D8	2852 H2	2862 B8	2871 F4	2878 F11	3706 G4	3714 F8	3731 G2	3746 B10	3854 A11	3864 A7	3876 C12	3882 E7	3888 E12	5802 B3	6873 D8	7805-A A9	7875 D12	9834 G10	9899 E4

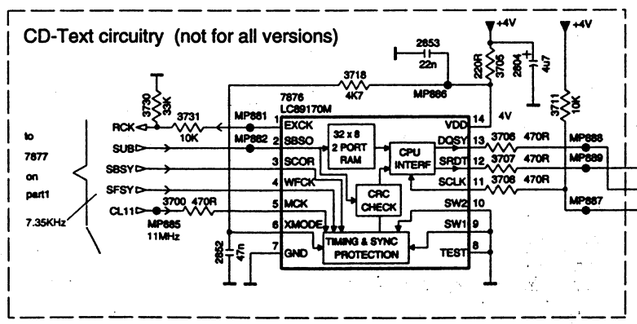
3CDC mainboard / part 2

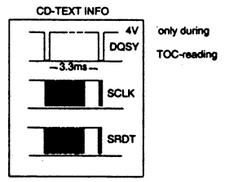
digital out circuitry (not for all versions)

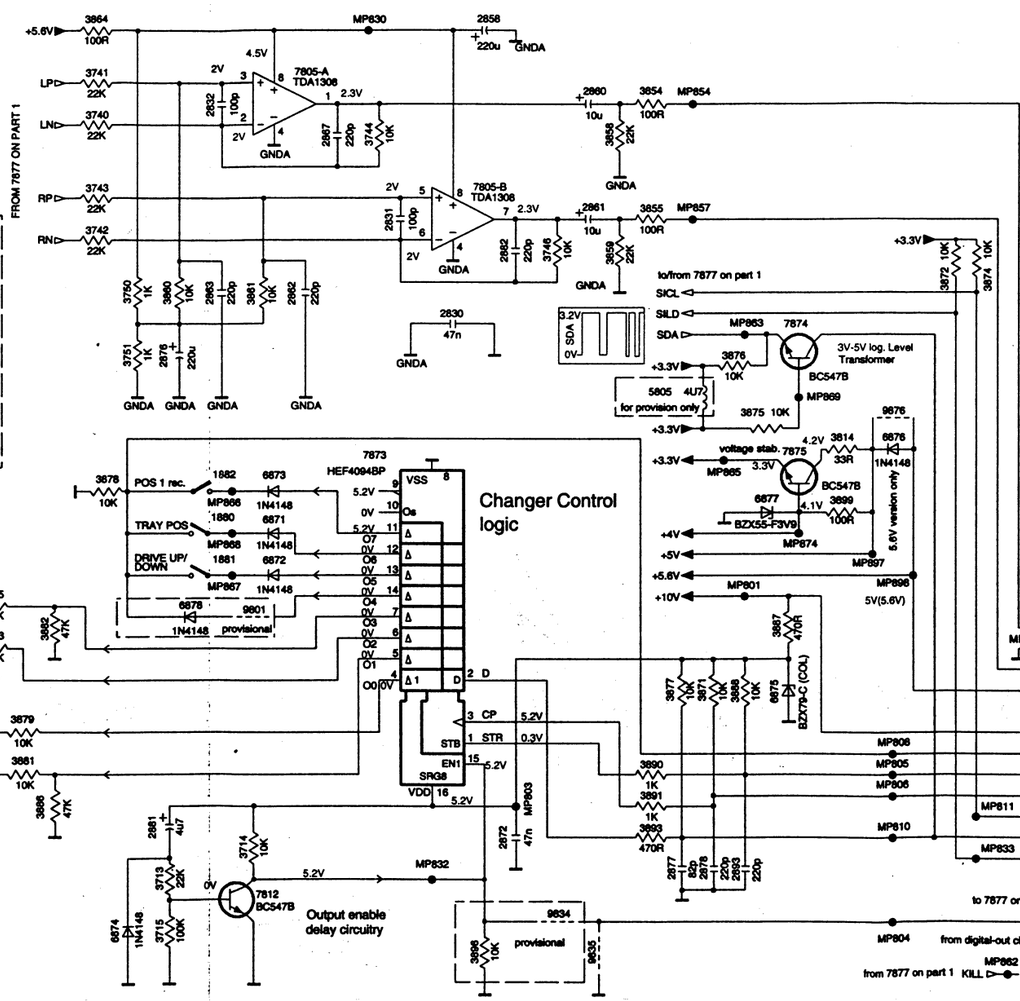


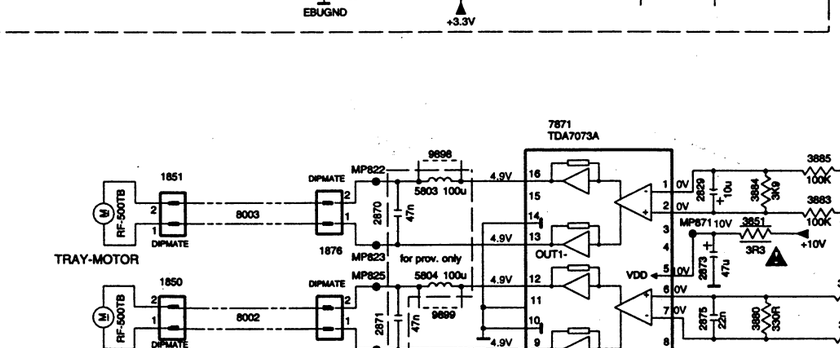
ITEM	OPT_OUT	COAX_OUT
3866	YES	NO
5802	NO	YES
9803	YES	NO
3809	YES	YES
3717	YES	NO
3716	NO	YES
3712	1R	10R
2865	NO	YES
2864	YES	YES
2854	NO	YES

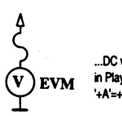
CD-Text circuitry (not for all versions)







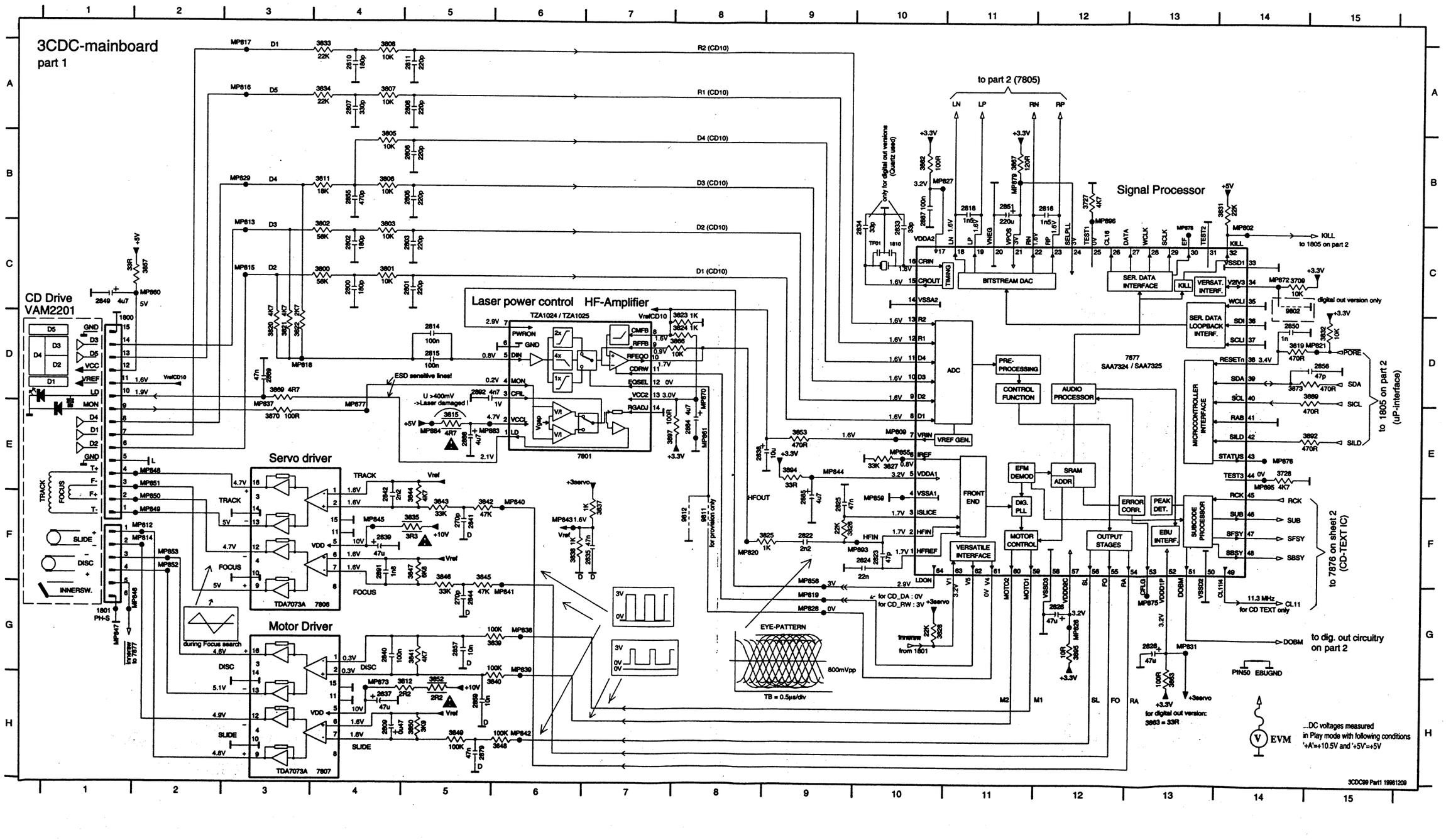




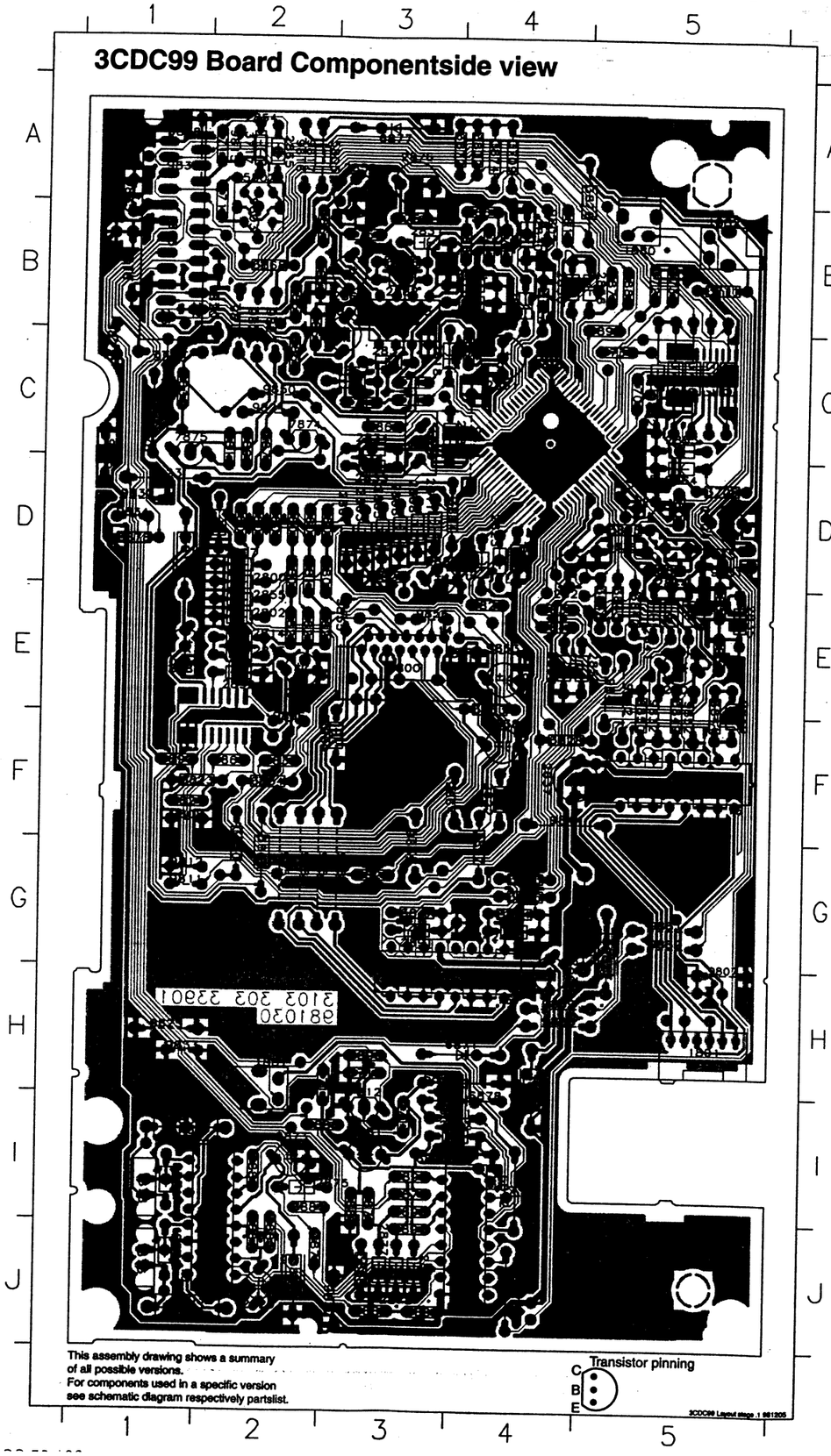
...DC voltages measured in Play mode with following conditions '+A'=+10.5V and '+5V'=+5V

10-9

1800 D2	2805 B5	2814 D5	2825 F9	2838 E8	2850 D14	2879 H5	2892 D5	3803 C4	3815 E5	3825 F9	3834 A4	3842 F5	3849 H5	3866 D8	3894 E9	9802 C14
1801 G1	2806 B5	2815 D5	2826 G12	2839 F4	2851 B11	2880 D8	3709 C14	3805 B4	3819 D14	3826 F9	3835 F5	3843 F5	3850 H5	3867 B11	3895 G12	9811 F8
1810 C10	2807 A4	2816 B12	2828 G13	2840 G4	2855 B4	2884 E8	3727 B12	3806 B4	3820 D3	3827 E10	3837 F7	3844 F5	3852 H5	3869 D3	3897 E7	9812 F8
2800 C4	2808 A5	2818 B11	2833 C10	2841 F5	2856 D15	2885 F9	3728 E14	3807 A4	3821 D3	3828 G10	3838 F6	3845 F5	3853 E9	3870 E3	7801 E7	
2801 C5	2809 H4	2822 F9	2834 C10	2842 F4	2857 G5	2887 B10	3800 C4	3808 A4	3822 D3	3831 B14	3839 G6	3846 F5	3857 C2	3873 D14	7806 G4	
2802 C4	2810 A4	2823 F10	2835 F7	2844 G5	2859 H5	2888 E5	3801 C4	3811 B4	3823 D8	3832 D15	3840 H6	3847 F5	3862 B10	3889 D15	7807 H4	
2803 C5	2811 A5	2824 F10	2837 H4	2849 C1	2869 D3	2891 F4	3802 C4	3812 H5	3824 D8	3833 A4	3841 G5	3848 H6	3863 H13	3892 E15	7877 D12	



3CDC99 Board Componentside view



Mapping

1800	E3	3716	A2	3889	B5
1801	H5	3717	A2	3890	I3
1805	B1	3718	C5	3891	J3
1810	C3	3727	B4	3892	B5
1876	J1	3728	B5	3893	I3
1878	I1	3730	B5	3894	D3
1880	B5	3731	C5	3895	D5
1881	H2	3740	C3	3896	H3
1882	B5	3741	C3	3897	F1
2800	D2	3742	B4	3899	C2
2801	D3	3743	B4	5802	A2
2802	E2	3744	C3	5803	J1
2803	D3	3746	B3	5804	I1
2804	D5	3750	B3	5805	A2
2805	D3	3751	B3	6871	H4
2806	D3	3800	D2	6872	I4
2807	D2	3801	D2	6873	J4
2808	D3	3802	D2	6874	H3
2809	E5	3803	D2	6875	I3
2810	D2	3805	D2	6876	C1
2811	D3	3806	D2	6877	A3
2814	E2	3807	D2	6878	H4
2815	E2	3808	D2	7801	F1
2816	B4	3809	D5	7805	B3
2818	C3	3811	D2	7806	H3
2822	F4	3812	G5	7807	F5
2823	D4	3814	C2	7812	H3
2824	D4	3815	D1	7871	J2
2825	D4	3819	B4	7873	J4
2826	E4	3820	E2	7874	C2
2828	D5	3821	E2	7875	C1
2829	J2	3822	E2	7876	C5
2830	B4	3823	F1	7877	C4
2831	B3	3824	F1	9801	I4
2832	C3	3825	G3	9802	B4
2833	D3	3826	E4	9803	B2
2834	C3	3827	D3	9805	D1
2835	E5	3828	F4	9806	F2
2837	F4	3831	C1	9807	G5
2838	F4	3832	A4	9808	F1
2839	H4	3833	F2	9811	G1
2840	E5	3834	F2	9812	G1
2841	E5	3835	H4	9813	C1
2842	G4	3837	E5	9815	A2
2844	D5	3838	E5	9816	A2
2849	E4	3839	E4	9817	A2
2850	B4	3840	E4	9818	B1
2851	C4	3841	E5	9819	B2
2852	C5	3842	E5	9820	B2
2853	C5	3843	G4	9821	B2
2854	A2	3844	G4	9822	B2
2855	E2	3845	E5	9823	D1
2856	B5	3846	G4	9824	C2
2857	E5	3847	G3	9825	H1
2858	A3	3848	E5	9827	C1
2859	E4	3849	E5	9830	D1
2860	B3	3850	E5	9831	C4
2861	B3	3851	J2	9832	E5
2862	B4	3852	G5	9833	H1
2863	B4	3853	E4	9834	D1
2864	D5	3854	C2	9835	A1
2865	A2	3855	B2	9836	D5
2867	C3	3857	G4	9837	J3
2869	F2	3858	C2	9838	A1
2870	J1	3859	B2	9839	A1
2871	I1	3860	B4	9841	E5
2872	I4	3861	B4	9842	E5
2873	I2	3862	C3	9844	F4
2875	I3	3863	D5	9845	D5
2876	A3	3864	B2	9850	C2
2877	J3	3866	F2	9851	D5
2878	J3	3867	C4	9852	E5
2879	E5	3868	B2	9853	E4
2881	I3	3869	G2	9855	E3
2882	B3	3870	G2	9856	E3
2884	E2	3871	I3	9857	G2
2885	D3	3872	A3	9858	G2
2887	C4	3873	B5	9859	G3
2888	E1	3874	A4	9861	G5
2891	G3	3875	C2	9862	G5
2892	E2	3876	A4	9864	F3
2893	J3	3877	I3	9876	C1
3700	C5	3878	D1	9884	G3
3705	D5	3879	J2	9885	G2
3706	C5	3880	I2	9888	H4
3707	C5	3881	I2	9889	H4
3708	C5	3882	J3	9898	J1
3709	A4	3883	J2	9899	I1
3711	B5	3884	J2		
3712	B2	3885	J3		
3713	I3	3886	J3		
3714	H3	3887	I3		
3715	H3	3888	I3		

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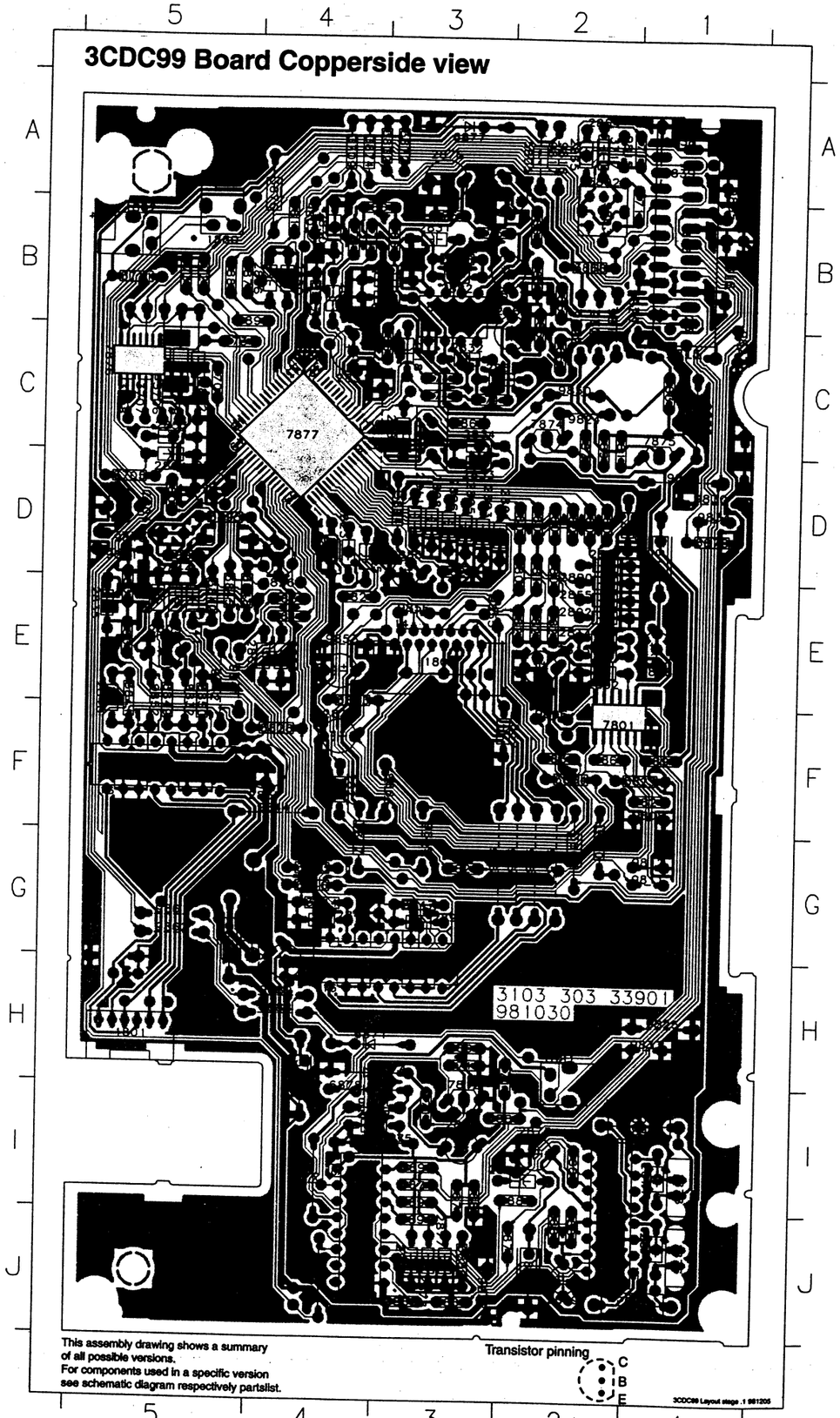
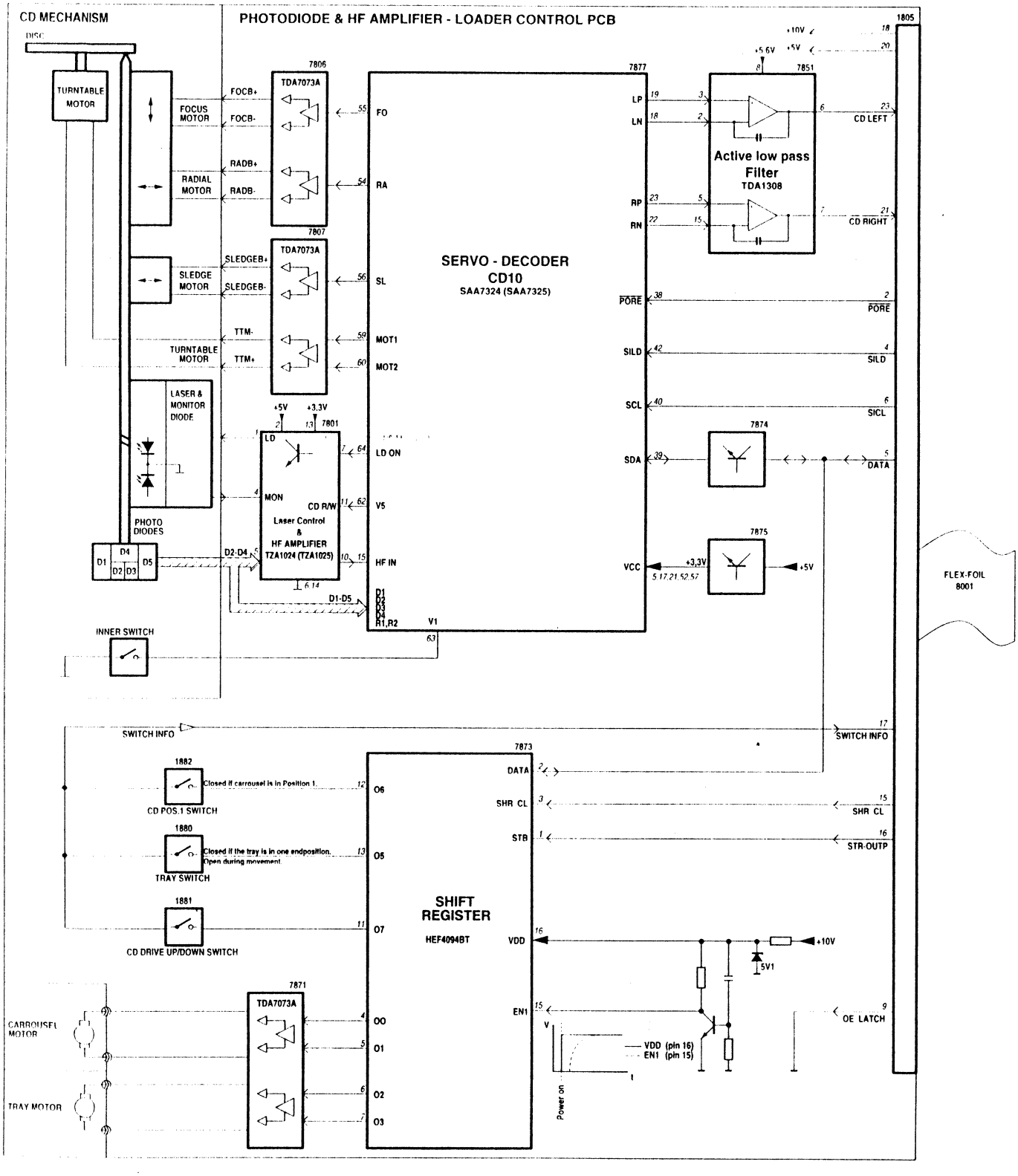
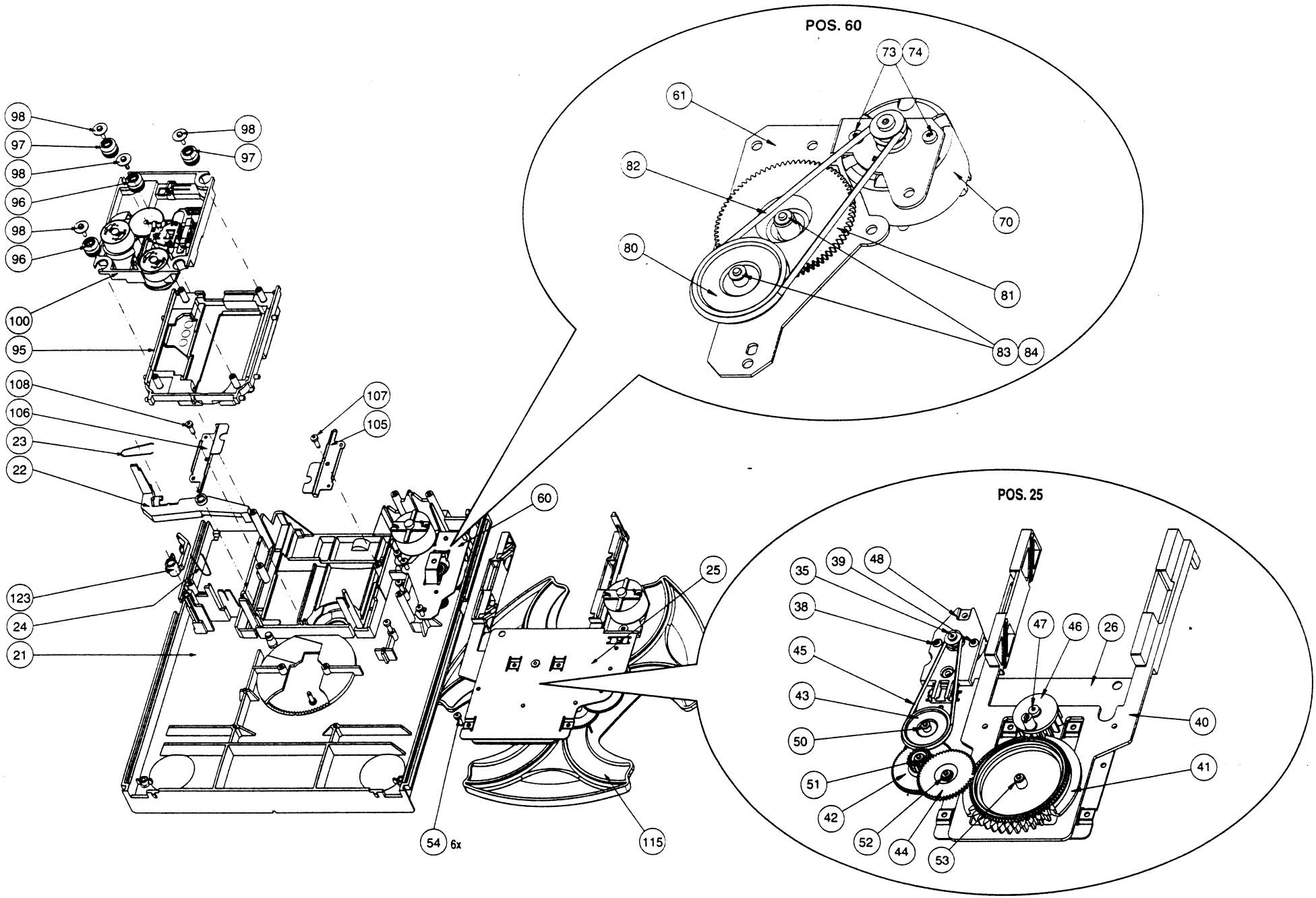
3CDC99 Board Copperside view



Blockdiagram



10-12


POS. 60
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POS. 25
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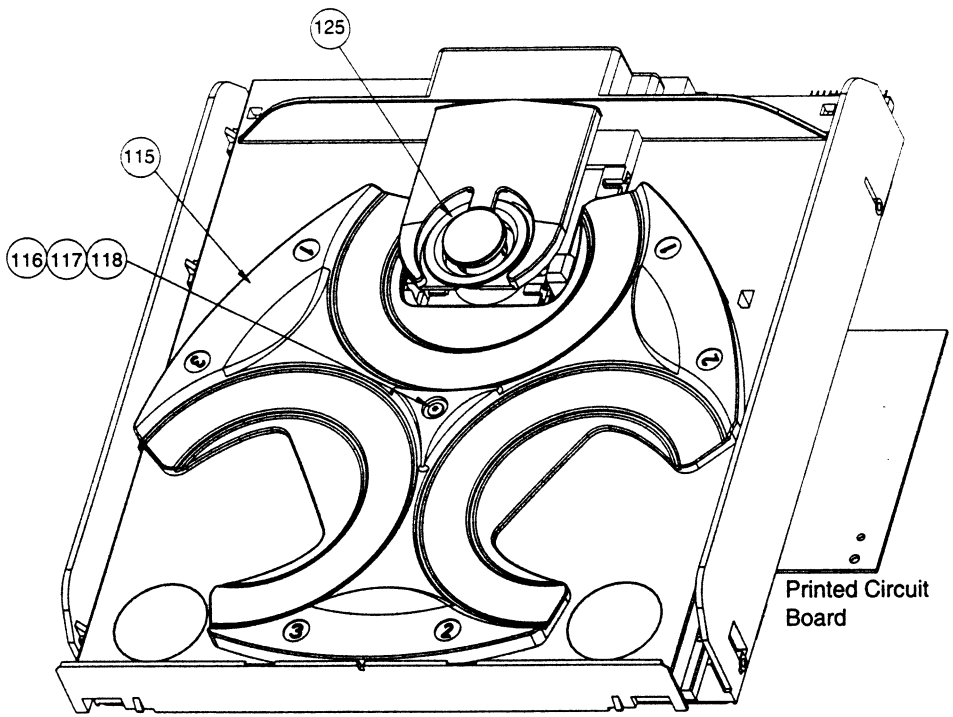
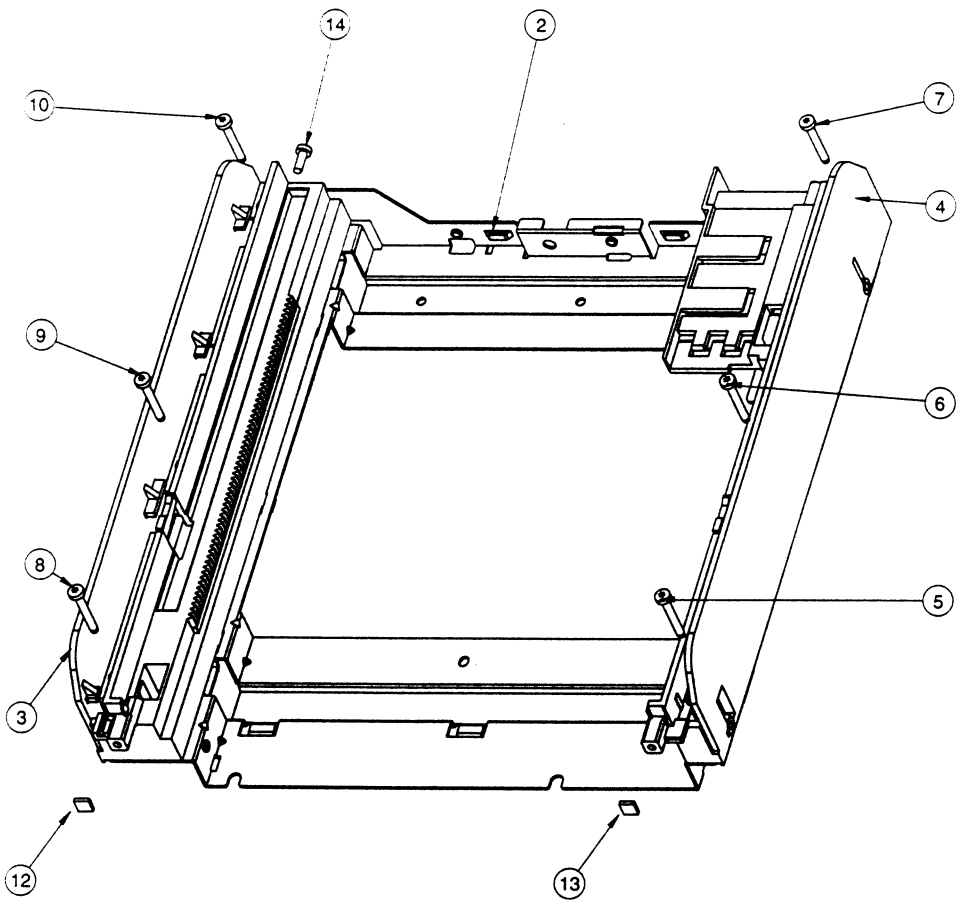
115



MECHANICAL PARTSLIST 3CDC-99 MODULE

	4822 390 10136	POLYLUB GLY801 (GREASE)	43	4822 528 10937	PULLEY
3	4822 463 11008	GUIDE LEFT	44	4822 522 10493	IDLER WHEEL
4	4822 463 11009	GUIDE RIGHT	45	4822 358 10115	BELT
21	4822 441 11615	DRAWER	46	4822 466 10735	ECCENTRIC GEAR WHEEL
22	4822 402 10088	BRACKET TUMBLER	50	4822 532 12364	WASHER
38	4822 502 12548	SCREW M2,6X3,5	51	4822 532 12364	WASHER
39	4822 502 12548	SCREW M2,6X3,5	52	4822 532 12364	WASHER
40	4822 463 11011	SLIDE	53	4822 532 12364	WASHER
41	4822 522 10509	CONTROL DISC	35	4822 361 10753	CARROUSEL MOTOR
42	4822 522 10492	GEAR WHEEL	70	4822 361 10753	CARROUSEL MOTOR

continued on next page



MECHANICAL PARTSLIST 3CDC-99 MODULE

73	4822 502 12548	SCREW M2,6X3,5
74	4822 502 12548	SCREW M2,6X3,5
80	4822 528 10937	PULLEY
81	4822 522 10494	GEAR DRAWER
82	4822 358 10115	BELT
83	4822 532 12364	WASHER
84	4822 532 12364	WASHER
95	4822 404 10895	SUPPORT
96	4822 529 10431	SUSPENSION
97	4822 529 10431	SUSPENSION
100	4822 691 10772	CD DRIVE VAM2201
115	4822 466 10736	CARROUSEL
117	4822 532 12365	BUSH DRAWER
123	4822 402 11237	SWITCH BRACKET
125	4822 401 11708	DISC CLAMP

ELECTRICAL PARTSLIST 3CDC-99 MODULE

MISCELLANEOUS

*800	4822 265 10925	FLEX FOIL CONNECTOR 15PIN	
*805	4822 265 11533	FLEX FOIL CONNECTOR 23PIN	
*805	4822 267 51322	FLEX FOIL CONNECTOR 15 PIN	
*880	4822 276 13503	SWITCH	
*881	4822 276 13503	SWITCH	
*882	4822 276 13503	SWITCH	

CAPACITORS

2800	4822 126 10053	180pF	10%	50V
2801	4822 122 10466	220pF	10%	50V
2802	4822 126 10053	180pF	10%	50V
2803	4822 122 10466	220pF	10%	50V
2804	4822 124 40246	4,7µF	20%	63V
2805	4822 122 10466	220pF	10%	50V
2806	4822 122 10466	220pF	10%	50V
2807	4822 126 12787	330pF	10%	50V
2808	4822 122 10466	220pF	10%	50V
2809	5322 124 41948	0,47µF	20%	50V
2810	4822 126 10053	180pF	10%	50V
2811	4822 122 10466	220pF	10%	50V
2814	4822 126 12785	47nF	20%	50V
2815	4822 126 12882	100nF	20%	50V
2816	4822 126 12878	1,5nF	10%	16V
2818	4822 126 12878	1,5nF	10%	16V
2822	4822 126 12339	2,2nF	10%	16V
2823	4822 122 33848	47pF	5%	50V
2824	4822 126 11585	22nF	20%	50V
2825	4822 126 12785	47nF	20%	50V
2826	4822 124 80231	47µF	20%	16V
2828	4822 124 40433	47µF	20%	25V
2829	4822 124 21732	10µF	20%	25V
2830	4822 126 12785	47nF	20%	50V
2831	4822 122 33195	100pF	10%	50V
2832	4822 122 33195	100pF	10%	50V
2833	4822 122 33069	33pF	5%	50V
2834	4822 122 33069	33pF	5%	50V
2835	4822 126 12785	47nF	20%	50V
2837	4822 124 40433	47µF	20%	25V
2838	4822 124 41579	10µF	20%	50V
2839	4822 124 40433	47µF	20%	25V
2840	4822 126 12882	100nF	20%	50V
2841	4822 126 12702	270pF	10%	50V
2842	4822 126 12339	2,2nF	10%	16V
2844	4822 126 12702	270pF	10%	50V
2849	4822 124 40246	4,7µF	20%	63V
2850	4822 122 33197	1nF	10%	50V
2851	4822 124 40196	220µF	20%	16V
2852	4822 126 12785	47nF	20%	50V
2853	4822 126 11585	22nF	20%	50V
2854	4822 126 12785	47nF	20%	50V
2855	4822 122 33519	470pF	10%	50V
2856	4822 122 33848	47pF	5%	50V
2857	4822 121 51387	10nF	20%	16V
2858	4822 124 40196	220µF	20%	16V
2859	4822 121 51387	10nF	20%	16V
2860	4822 124 41579	10µF	20%	50V
2861	4822 124 41579	10µF	20%	50V
2862	4822 122 10466	220pF	10%	50V
2863	4822 122 10466	220pF	10%	50V
2864	4822 122 33191	22pF	5%	50V
2865	4822 126 11585	22nF	20%	50V
2867	4822 122 10466	220pF	10%	50V
2869	4822 126 12785	47nF	20%	50V

CAPACITORS

2872	4822 126 12785	47nF	20%	50V
2873	4822 124 12233	47µF	20%	25V
2875	4822 126 11585	22nF	20%	50V
2876	4822 124 40196	220µF	20%	16V
2877	4822 122 10319	82pF	5%	50V
2878	4822 122 10466	220pF	10%	50V
2879	4822 126 12785	47nF	20%	50V
2882	4822 122 10466	220pF	10%	50V
2884	4822 124 40246	4,7µF	20%	63V
2885	4822 124 40246	4,7µF	20%	63V
2887	4822 126 12882	100nF	20%	50V
2888	4822 124 40246	4,7µF	20%	63V
2891	4822 122 10576	1,8nF	10%	16V
2892	4822 126 11714	4,7nF	20%	16V
2893	4822 122 10466	220pF	10%	50V

RESISTORS

3700	4822 116 83883	470Ω	5%	0,16W
3705	4822 116 83872	220Ω	5%	0,5W
3706	4822 116 83883	470Ω	5%	0,16W
3707	4822 116 83883	470Ω	5%	0,16W
3708	4822 116 83883	470Ω	5%	0,16W
3709	4822 116 83864	10kΩ	5%	0,5W
3711	4822 116 83864	10kΩ	5%	0,5W
3712	4822 116 52176	10Ω	5%	0,5W
3713	4822 116 52257	22kΩ	5%	0,5W
3714	4822 116 83864	10kΩ	5%	0,5W
3715	4822 116 52234	100kΩ	5%	0,5W
3716	4822 116 83883	470Ω	5%	0,16W
3718	4822 116 52283	4,7kΩ	5%	0,5W
3727	4822 116 52283	4,7kΩ	5%	0,5W
3728	4822 116 52283	4,7kΩ	5%	0,5W
3730	4822 116 52271	33kΩ	5%	0,16W
3731	4822 116 83864	10kΩ	5%	0,5W
3740	4822 116 52257	22kΩ	5%	0,5W
3741	4822 116 52257	22kΩ	5%	0,5W
3742	4822 116 52257	22kΩ	5%	0,5W
3743	4822 116 52257	22kΩ	5%	0,5W
3744	4822 116 83864	10kΩ	5%	0,5W
3746	4822 116 83864	10kΩ	5%	0,5W
3750	4822 050 11002	1kΩ	5%	0,2W
3751	4822 050 11002	1kΩ	5%	0,2W
3800	4822 116 52291	56kΩ	5%	0,5W
3801	4822 116 83864	10kΩ	5%	0,5W
3802	4822 116 52291	56kΩ	5%	0,5W
3803	4822 116 83864	10kΩ	5%	0,5W
3805	4822 116 83864	10kΩ	5%	0,5W
3806	4822 116 83864	10kΩ	5%	0,5W
3807	4822 116 83864	10kΩ	5%	0,5W
3808	4822 116 83864	10kΩ	5%	0,5W
3809	4822 116 83876	270Ω	5%	0,16W
3811	4822 116 52251	18kΩ	5%	0,5W
3812	4822 053 10228	2,2Ω	5%	1W
3814	4822 116 52191	33Ω	5%	0,5W
3815	4822 052 10478	4,7Ω	5%	NFR
3819	4822 116 83883	470Ω	5%	0,16W
3820	4822 116 52283	4,7kΩ	5%	0,5W
3821	4822 116 52283	4,7kΩ	5%	0,5W
3822	4822 116 52249	1,8kΩ	5%	0,16W
3823	4822 050 11002	1kΩ	5%	0,2W
3824	4822 050 11002	1kΩ	5%	0,2W
3825	4822 050 11002	1kΩ	5%	0,2W
3826	4822 116 52257	22kΩ	5%	0,5W
3827	4822 116 52271	33kΩ	5%	0,16W

ELECTRICAL PARTSLIST 3CDC-99 MODULE

RESISTORS

3828	4822 116 52257	22kΩ	5%	0,5W
3831	4822 116 52257	22kΩ	5%	0,5W
3832	4822 116 83864	10kΩ	5%	0,5W
3833	4822 116 52257	22kΩ	5%	0,5W
3834	4822 116 52257	22kΩ	5%	0,5W
3835	4822 052 10338	3,3Ω		NFR25
3837	4822 050 11002	1kΩ	5%	0,2W
3838	4822 050 11002	1kΩ	5%	0,2W
3839	4822 116 52234	100kΩ	5%	0,5W
3840	4822 116 52234	100kΩ	5%	0,5W
3841	4822 116 52283	4,7kΩ	5%	0,5W
3842	4822 116 83884	47kΩ	5%	0,16W
3843	4822 116 52271	33kΩ	5%	0,16W
3844	4822 116 52283	4,7kΩ	5%	0,5W
3845	4822 116 83884	47kΩ	5%	0,16W
3846	4822 116 52271	33kΩ	5%	0,16W
3847	4822 116 83961	6,8kΩ	5%	0,16W
3848	4822 116 52234	100kΩ	5%	0,5W
3849	4822 116 52234	100kΩ	5%	0,5W
3850	4822 116 52276	3,9kΩ	5%	0,5W
3851	4822 052 10338	3,3Ω		NFR25
3852	4822 052 10228	2,2Ω	5%	0,33W
3853	4822 116 83883	470Ω	5%	0,16W
3854	4822 116 52175	100Ω	5%	0,5W
3855	4822 116 52175	100Ω	5%	0,5W
3857	4822 116 52191	33Ω	5%	0,5W
3858	4822 116 52257	22kΩ	5%	0,5W
3859	4822 116 52257	22kΩ	5%	0,5W
3860	4822 116 83864	10kΩ	5%	0,5W
3861	4822 116 83864	10kΩ	5%	0,5W
3862	4822 116 52175	100Ω	5%	0,5W
3863	4822 116 52175	100Ω	5%	0,5W
3863	4822 116 52191	33Ω	5%	0,5W
3864	4822 116 52175	100Ω	5%	0,5W
3866	4822 116 83864	10kΩ	5%	0,5W
3867	4822 116 83868	150Ω	5%	0,5W
3869	4822 050 24708	4,7Ω	1%	0,6W
3870	4822 116 52175	100Ω	5%	0,5W
3871	4822 116 83864	10kΩ	5%	0,5W
3872	4822 116 83864	10kΩ	5%	0,5W
3873	4822 116 83883	470Ω	5%	0,16W
3874	4822 116 83864	10kΩ	5%	0,5W
3875	4822 116 83864	10kΩ	5%	0,5W
3876	4822 116 83864	10kΩ	5%	0,5W
3877	4822 116 83864	10kΩ	5%	0,5W
3878	4822 116 83864	10kΩ	5%	0,5W
3879	4822 116 83864	10kΩ	5%	0,5W
3880	4822 116 52219	330Ω	5%	0,5W
3881	4822 116 83864	10kΩ	5%	0,5W
3882	4822 116 83884	47kΩ	5%	0,16W
3883	4822 116 52234	100kΩ	5%	0,5W
3884	4822 116 52276	3,9kΩ	5%	0,5W
3885	4822 116 52234	100kΩ	5%	0,5W
3886	4822 116 83884	47kΩ	5%	0,16W
3887	4822 116 83883	470Ω	5%	0,16W
3888	4822 116 83864	10kΩ	5%	0,5W
3889	4822 116 83883	470Ω	5%	0,16W
3890	4822 050 11002	1kΩ	5%	0,2W
3891	4822 050 11002	1kΩ	5%	0,2W
3892	4822 116 83883	470Ω	5%	0,16W
3893	4822 116 83883	470Ω	5%	0,16W
3894	4822 116 52191	33Ω	5%	0,5W
3895	4822 116 52176	10Ω	5%	0,5W
3897	4822 116 52175	100Ω	5%	0,5W
3899	4822 116 52175	100Ω	5%	0,5W

COILS

1810	4822 242 10849	QUARTZ 8,46MHz
1810	4822 242 73557	CERAMIC RES. 8,46MHz
5802	4822 156 31058	FILTER DIGITAL OUT

DIODES

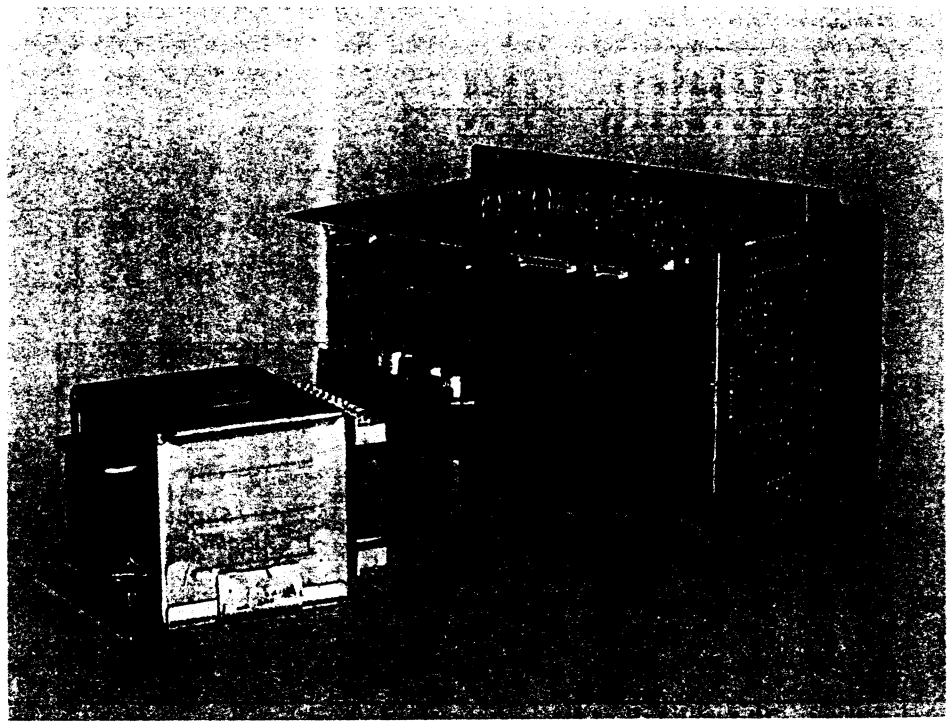
6871	4822 130 30621	1N4148
6872	4822 130 30621	1N4148
6873	4822 130 30621	1N4148
6874	4822 130 30621	1N4148
6875	4822 130 34233	BZX79-B5V1
6877	4822 130 31981	BZX79-C3V9

TRANSISTORS

7812	4822 130 40959	BC547B
7874	4822 130 40959	BC547B
7875	4822 130 40959	BC547B

INTEGRATED CIRCUITS

7801©	4822 209 17286	TZA1024T/N1 HF-AMPLIFIER
7805	4822 209 17284	TDA1308 OPAMP
7806	4822 209 32852	TDA7073A/N2 SERVO DRIVER
7807	4822 209 32852	TDA7073A/N2 MOTOR DRIVER
7871	4822 209 32852	TDA7073A/N2 MOTOR DRIVER
7873	5322 209 10421	HEF4094BP SHIFT REGISTER
7876©	4822 209 16143	LC89170M CD TEXT
7877©	4822 209 17285	SAA7324H/M1 SIGNAL PROCESSOR



POWER 5-VA Module

(70 / 100W Version)

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Circuit diagram L/R Amplifier part 11-7
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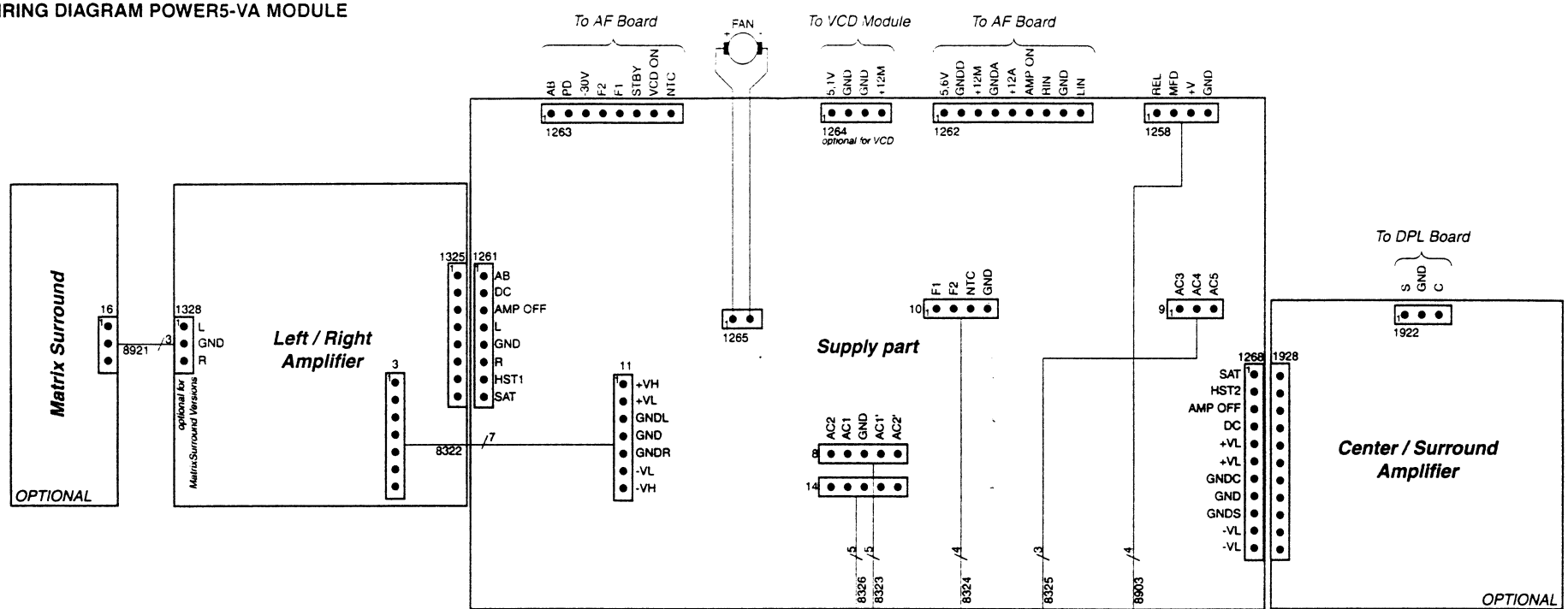
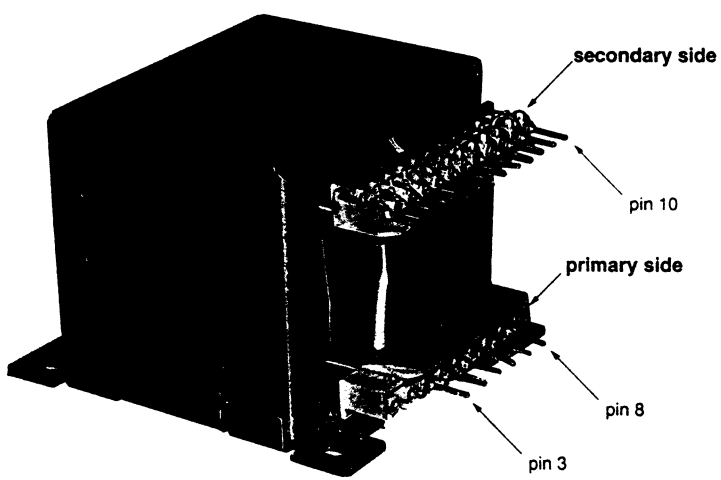
11-2

WIRING DIAGRAM POWER5-VA MODULE



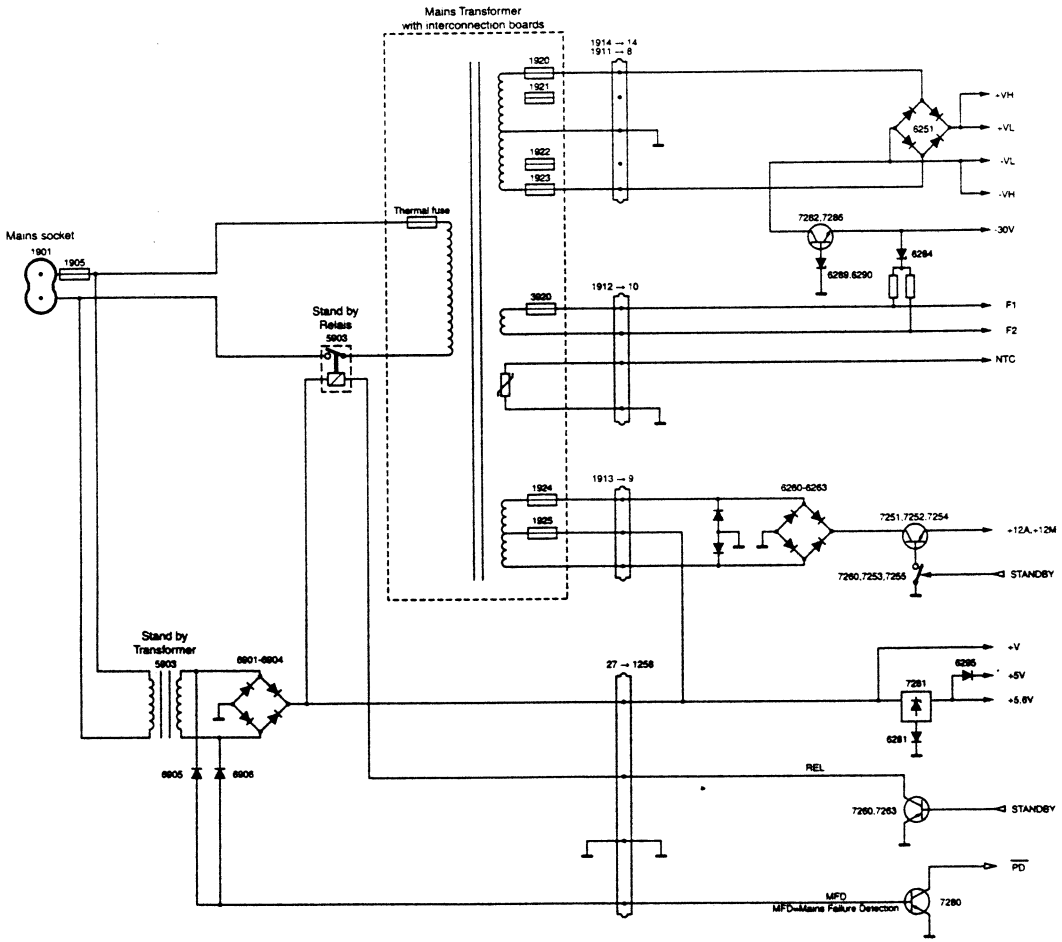
Mains Transformer /21



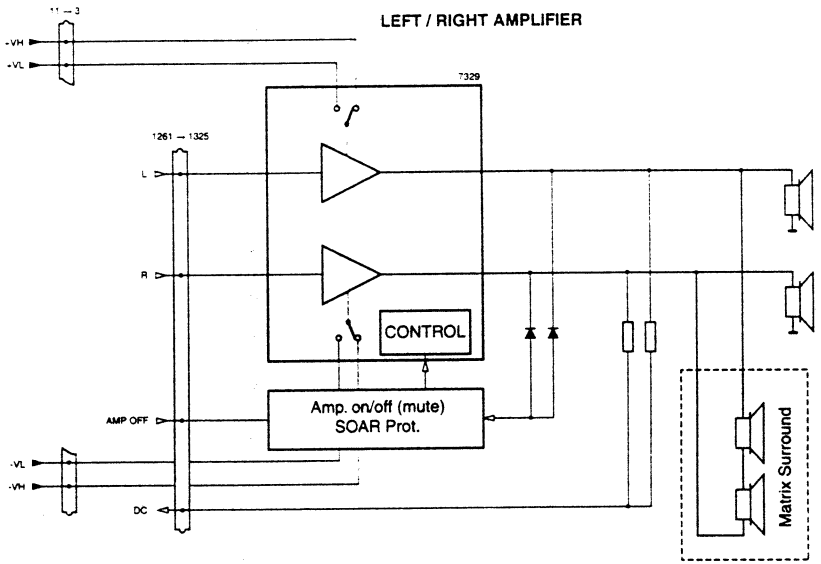
11-3

BLOCK DIAGRAM 70/100W VERSION

SUPPLY PART



LEFT / RIGHT AMPLIFIER



11-4

COMPONENT LAYOUT SUPPLY PART & L/R AMPLIFIER PART

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9367 A 3	7312 A 7	3004 B 12	3280 D 10	9264 A 11	7286 B 9	7252 C 12	6286 B 8	5255 E 9	3305 C 9	3283 D 11	3263 B 12	2303 A 7	2279 D 12	2256 D 9	14 D 9	9349 B 2	9329 C 3	7325 E 1	5324 E 5	3372 E 3	3351 D 2	3334 D 2	2364 D 3	2346 C 4	2329 D 4	3 C 2
9368 A 3	7314 A 10	9305 A 10	9281 D 10	9265 E 12	7290 D 7	7253 A 8	6287 B 8	6260 D 13	3306 A 8	3284 D 11	3265 B 12	3248 A 11	2280 C 12	2257 D 8	1258 A 13	9350 C 2	9331 C 5	7326 E 2	6325 C 3	3373 C 1	3352 D 1	3335 D 2	2365 D 2	2347 C 4	2330 E 4	1321 D 6
9369 A 3	7315 B 9	9306 B 12	3284 C 12	9266 E 12	7292 E 12	7254 D 12	6288 B 8	6261 D 13	3308 A 10	3285 B 9	3266 A 8	3249 A 11	2281 C 12	2258 C 8	1261 C 5	9351 D 5	9332 B 5	7327 D 1	6326 C 4	3376 C 1	3353 D 1	3336 C 2	2366 C 5	2348 C 4	2331 C 2	1322 B 6
9370 A 2	7316 A 10	9307 B 10	9285 C 12	9267 E 12	6328 C 9	7255 C 12	6289 B 10	6262 C 13	3309 B 7	3286 B 10	3267 A 8	3250 A 11	2282 D 11	2259 D 10	1262 A 12	9353 C 5	9333 B 5	7328 C 1	6327 B 4	3377 B 5	3355 C 3	3337 D 2	2321 B 1	2349 C 4	2333 E 3	1323 B 6
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	16 A 4	9309 B 8	9287 C 10	9269 E 12	9252 E 8	7262 B 13	6292 D 7	6264 C 11	3311 A 10	3288 B 10	3270 C 12	3252 D 12	2284 C 9	2261 C 11	1264 A 10	9355 B 5	9336 E 3	7330 C 4	6329 B 4	3379 B 5	3357 E 1	3339 D 2	2323 E 1	2351 D 4	2335 E 3	1325 B 2
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	3360 A 2	9315 B 9	9291 C 9	9273 E 12	9256 E 12	7268 A 7	6296 A 9	6270 B 12	3316 A 8	3298 D 7	3274 E 8	3256 B 13	2288 A 13	2265 C 13	1290 E 11	9359 E 4	9342 D 5	9322 B 1	6335 E 4	3385 C 5	3365 D 5	3343 D 3	3327 E 3	2355 C 6	2339 B 3	2322 E 3
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	3363 A 2	T257 C 12	9298 B 12	9276 D 9	9260 A 10	7282 B 10	6299 B 7	6281 E 12	3319 A 7	3301 B 7	3279 E 12	3259 A 12	2295 C 12	2268 C 12	2252 E 10	8 D 9	9345 C 4	9325 D 3	6339 D 1	3388 D 6	3368 C 1	3346 E 1	3330 E 3	2360 B 5	2342 C 2	2325 D 4
	3364 A 4	T258 D 13	9300 B 12	9277 B 11	9261 A 12	7283 A 10	6301 B 11	6283 B 11	3320 A 7	3302 B 7	3280 A 13	3260 C 12	2300 B 7	2289 C 12	2253 D 10	9 B 13	9346 D 4	9326 C 4	6360 D 5	5321 C 5	3369 B 5	3347 E 1	3331 E 3	2361 B 1	2343 D 1	2326 E 4
	3365 A 3	T265 B 10	9302 A 11	9278 E 9	9262 A 8	7284 A 11	6302 B 7	6284 B 10	6251 E 10	3303 E 13	3281 C 12	3261 C 11	2301 B 8	2254 D 9	10 B 10	9347 C 2	9327 D 3	7323 C 1	5322 E 5	3370 E 5	3348 E 1	3332 E 3	2362 B 1	2344 D 3	2327 E 3
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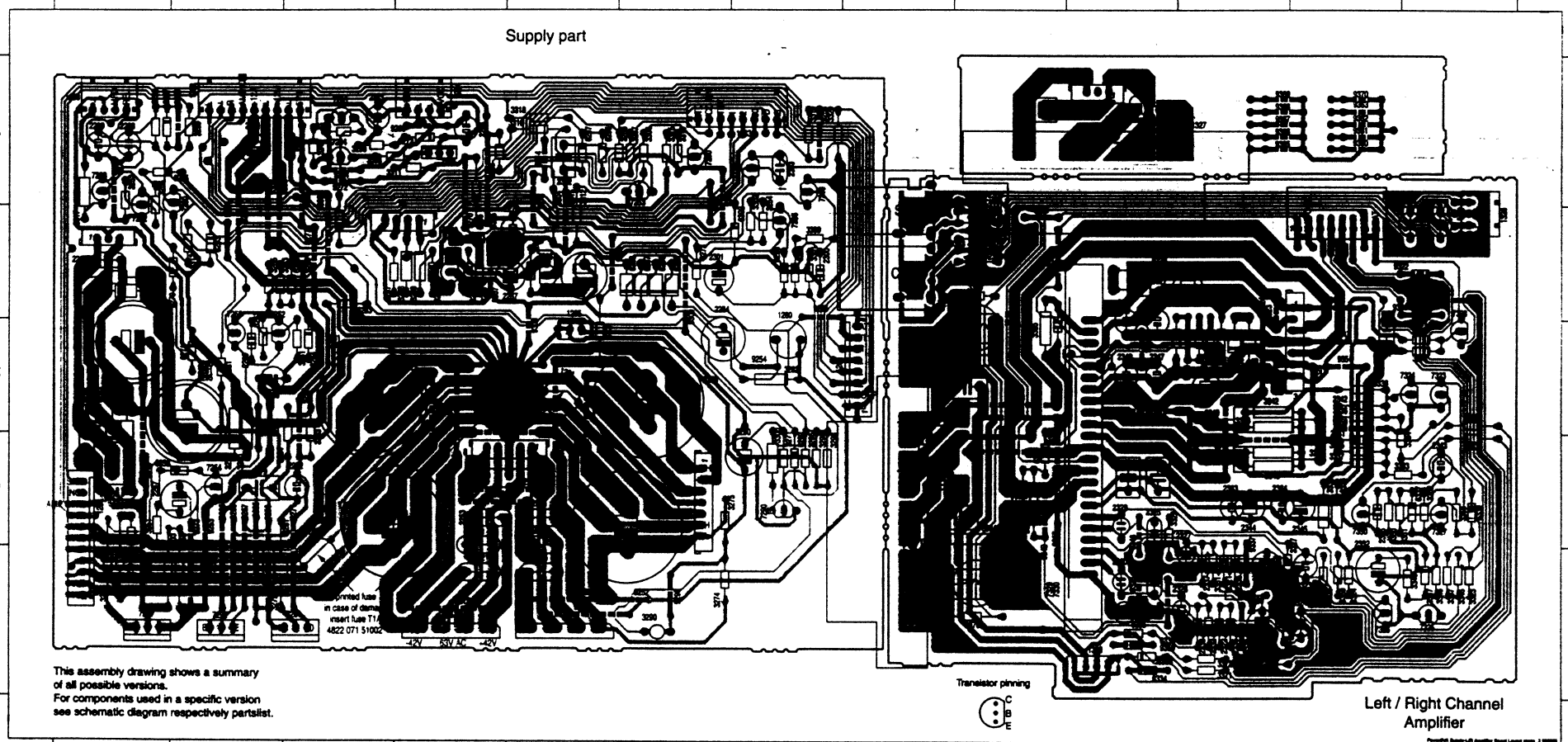
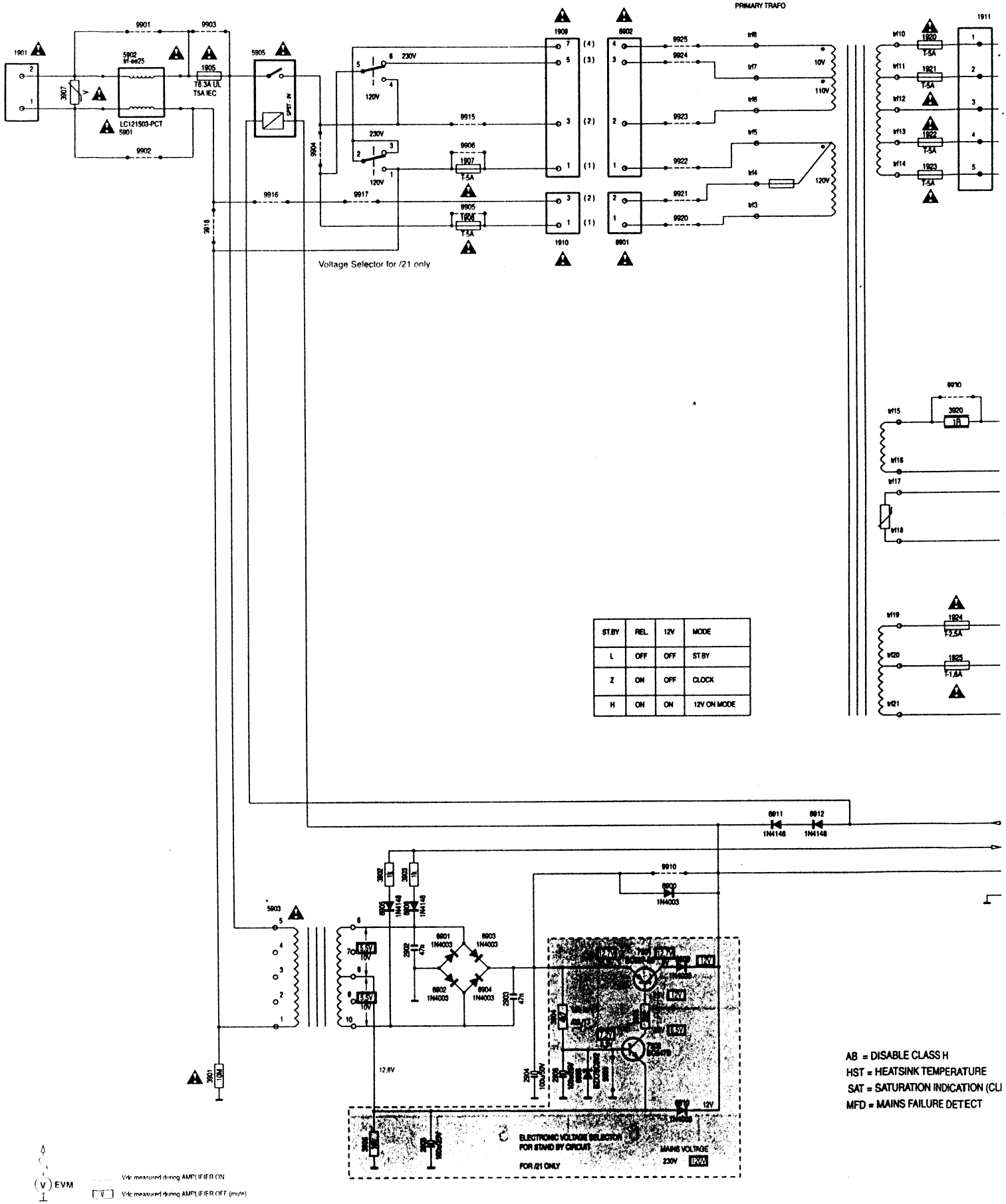

Supply part
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.
Transistor pinning
C
B
E
Left / Right Channel Amplifier

POWER 5-VA SUPPLY PART 70/100W Version


PRIMARY TRAFO
Voltage Selector for /21 only
ST.BY | REL. | 12V | MODE
L | OFF | OFF | ST.BY
Z | ON | OFF | CLOCK
H | ON | ON | 12V ON MODE
ELECTRONIC VOLTAGE SELECTOR FOR STAND BY CIRCUIT
FOR /21 ONLY
MAINS VOLTAGE
230V
AB = DISABLE CLASS H
HST = HEATSINK TEMPERATURE
SAT = SATURATION INDICATION (CL
MFD = MAINS FAILURE DETECT
(V) EVM
Vdc measured during AMPLIFIER ON
Vdc measured during AMPLIFIER OFF (mute)

11-5

PRIMARY TRAFO

AMPLIFIER SUPPLY

DISPLAY-SUPPLY

DC PROTECTION CIRCUIT

AUX-SUPPLY

+12V REGULATOR

ON/OFF CONTROL FOR RELAY, +12V

+5,6V-STABILIZER

POWER DOWN CIRCUIT

RELAY CONTROL CIRCUIT

+5V REGULATOR FOR VCD

FAN REGULATION

AMP ON/OFF CIRCUIT

ONLY FOR FOUR CHANNEL VERSIONS

ST.BY	REL.	12V	MODE
L	OFF	OFF	ST.BY
Z	ON	OFF	CLOCK
H	ON	ON	12V ON MODE

AB = DISABLE CLASS H
HST = HEATSINK TEMPERATURE
SAT = SATURATION INDICATION (CLIPPING)
MFD = MAINS FAILURE DETECT

0010 Q14	6904 M6	3251 I18	9201 C17
0011 B29	6905 L5	3252 I18	9202 C18
1258 K14	6906 L5	3253 Q20	9253 H20
1261 P29	6908 N8	3254 E24	9254 E19
1262 H29	6908 L9	3255 I19	9255 H23
1263 M29	6910 N9	3256 Q21	9256 L17
1264 M29	6911 K10	3259 L22	9258 H27
1265 N29	6912 K11	3260 J17	9260 N28
1268 B29	7251 H19	3261 I21	9261 N17
1280 E18	7252 J20	3262 J21	9276 A16
1290 C26	7253 L23	3263 C10	9280 C18
1291 B26	7255 J18	3265 F24	9900 N8
14 A14	7260 L24	3266 K25	9901 A2
1901 A1	7262 N20	3267 K25	9902 B2
1905 A3	7263 N20	3268 J16	9903 A3
1906 C6	7265 H24	3271 Q26	9904 B4
1907 C6	7266 E24	3272 Q21	9905 C6
1909 A7	7268 F24	3273 H23	9906 B6
1910 D7	7280 N17	3274 C19	9910 K9
1911 A13	7281 L17	3275 C18	9911 F1
1912 E13	7282 E20	3277 C21	9912 G1
1913 H13	7283 M23	3278 L17	9913 G1
1914 A13	7284 Q23	3279 L17	9914 G1
1920 A12	7285 Q24	3280 O17	9915 B6
1921 A12	7286 E20	3281 N18	9916 C4
1922 B12	7290 N26	3282 E18	9917 C5
1923 C12	7292 K17	3283 I23	9918 C5
1924 H12	7901 L6	3284 I23	9920 C9
1925 I12	7902 M8	3285 F19	9921 C9
2251 A16	8 A15	3286 F20	9922 C9
2252 A16	8901 D8	3287 F22	9923 B9
2253 B17	8902 A8	3288 F21	9924 A9
2254 A18	9 H14	3289 F21	9925 A9
2255 A18	9251 C17	3290 O26	9927 A13
2256 B19	9252 C18	3295 N26	9928 C13
2257 C18	9253 H20	3296 N27	9930 E12
2258 C19	9254 E19	3298 N28	tr10 A11
2260 C20	9255 H23	3300 N27	tr11 A11
2262 C20	9256 L17	3301 F25	tr12 B11
2263 I16	9258 H27	3302 E24	tr13 C10
2264 I17	9260 N28	3304 H24	tr14 C10
2265 I17	9261 N17	3305 H25	tr15 B10
2266 I17	9276 A16	3306 L23	tr16 B10
2267 H19	9280 C18	3308 N23	tr17 A10
2268 I20	9900 N8	3309 F24	tr18 A10
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2270 K24	9902 B2	3311 N23	
2271 I21	9903 A3	3312 L23	
2279 M17	9904 B4	3313 N20	
2280 J16	9905 C6	3315 L24	
2281 J16	9906 B6	3316 K24	
2282 M18	9910 K9	3317 Q19	
2283 N24	9911 F1	3318 K25	
2286 N25	9912 G1	3319 H27	
2287 F20	9913 G1	3320 H27	
2288 O17	9914 G1	3901 N3	
2289 O17	9915 B6	3902 K5	
2290 O26	9916 C4	3903 K6	
2295 J16	9917 C5	3904 M7	
2300 F23	9918 C5	3905 M8	
2301 F25	9920 C9	3906 N5	
2302 K25	9921 C9	3907 B1	
2303 Q24	9922 C9	3920 F12	
27 J13	9923 B9	5901 B2	
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2903 M7	9925 A9	5903 L4	
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3256 Q21	tr18 G11	6270 O19	
3259 L22	tr19 H11	6271 O19	
3260 J17	tr20 I11	6272 N24	
3261 I21	tr21 I11	6281 M17	
3262 J21	tr3 C10	6283 I23	
3263 F24	tr4 C10	6284 E22	
3265 K25	tr5 B10	6286 F21	
3266 K25	tr6 B10	6290 F20	
3267 K25	tr7 A10	6292 I23	
3268 J26	tr8 A10	6293 O18	
3270 J16		6294 H15	
3271 Q26		6295 K18	
3272 Q21		6296 K26	
3273 H23		6297 K26	
3274 C19		6298 E25	
3275 C18		6299 F24	
3277 C21		6301 H24	
3278 L17		6302 H25	
3280 O17		6900 K9	
3281 N18		6901 L6	
3282 E18		6902 M6	
3283 I23		6903 L7	
3284 I23			
3285 F19			
3286 F20			
3287 F22			
3288 F21			
3289 F21			
3290 O26			
3295 N26			
3296 N27			
3298 N28			
3300 N27			
3301 F25			
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3306 L23			
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3309 F24			
3310 N23			
3311 N23			
3312 L23			
3313 N20			
3315 L24			
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3317 Q19			
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6260 H16			
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6262 H17			
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6264 I20			
6265 N21			
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6270 O19			
6271 O19			
6272 N24			
6281 M17			
6283 I23			
6284 E22			
6286 F21			
6290 F20			
6292 I23			
6293 O18			
6294 H15			
6295 K18			
6296 K26			
6297 K26			
6298 E25			
6299 F24			
6301 H24			
6302 H25			
6900 K9			
6901 L6			
6902 M6			
6903 L7			

11-6

COMPONENT LAYOUT SUPPLY PART & L/R AMPLIFIER PART

9367 A 3 T312 A 7 3304 B 12 9280 D 10 9264 A 11 7286 B 9 7252 C 12 6286 B 8 6255 E 9 3305 C 9 3283 D 11 3263 B 12 2303 A 7 2279 D 12 2256 D 9 14 D 9 9349 B 2 9329 C 3 7325 E 1 5324 E 5 3372 E 3 3351 D 2 3334 D 2 2364 D 3 2346 C 4 2329 D 4 3 C 2
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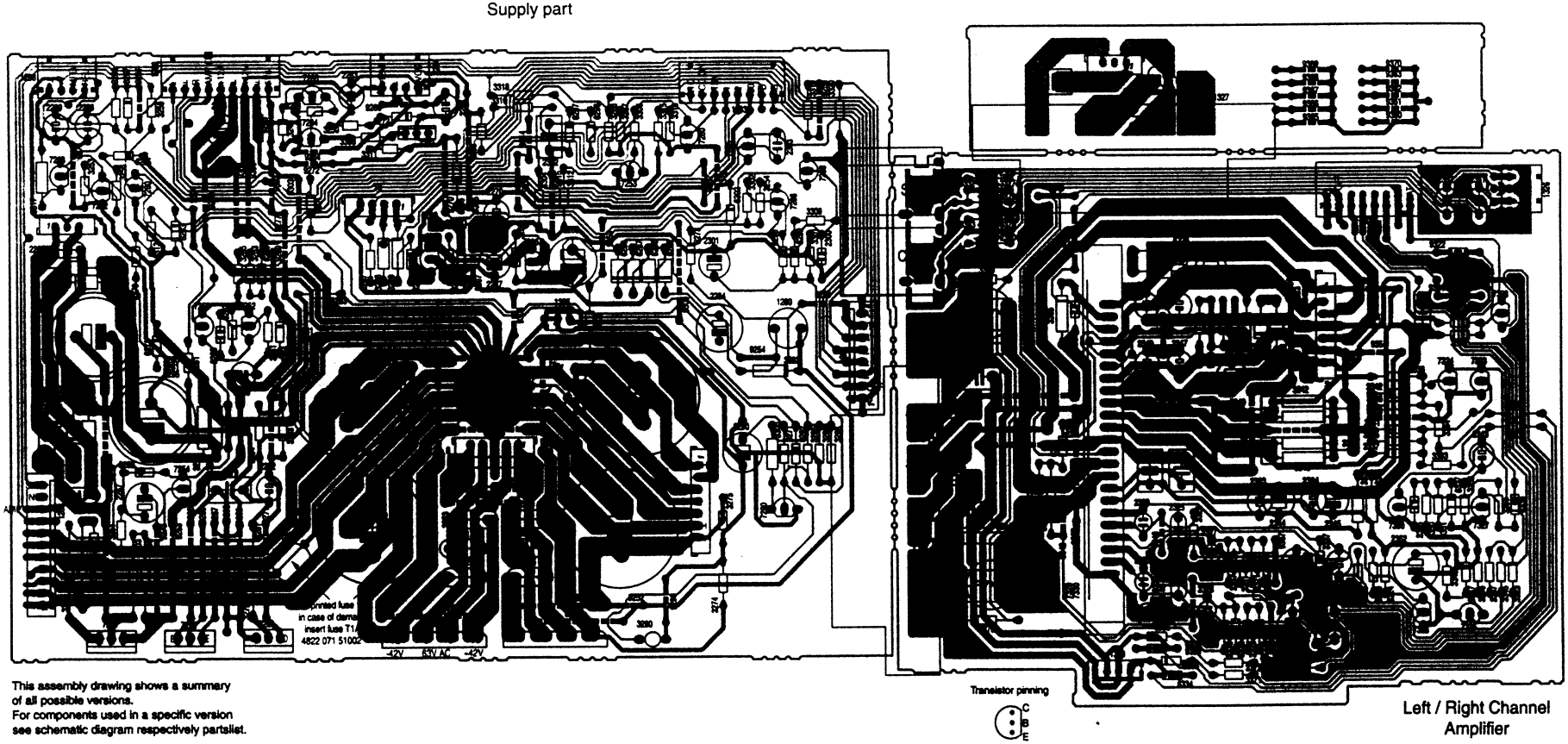
9362 A 2 T256 C 13 9298 E 8 9275 C 10 9259 B 9 7281 E 11 6298 B 7 6272 A 10 3318 A 9 3300 D 7 3276 D 13 2290 D 7 1290 E 11 — 9343 B 1 9323 B 3 6337 D 1 6339 D 1 3387 D 6 3367 D 1 3345 E 1 3329 D 4 2359 A 5 2341 D 2 2324 E 2
9363 A 2 T257 C 12 9299 B 12 9276 D 9 9260 A 10 7282 B 10 6299 B 7 6273 E 12 3319 A 7 3301 B 7 3279 E 12 3258 E 12 2291 C 12 2268 C 12 2251 D 10 8 D 9 9344 D 3 9324 C 3 5337 D 1 3388 D 6 3368 C 1 3346 E 1 3330 E 3 2360 B 5 2342 C 2 2325 D 4
9364 A 4 T258 D 13 9300 B 12 9277 B 11 9261 A 12 7283 A 10 6301 B 11 6274 A 11 3320 A 7 3302 B 7 3280 A 13 3260 C 12 2295 C 12 2269 C 12 2253 D 10 9 B 13 9345 C 4 9325 D 3 5338 D 1 5360 D 5 3389 B 5 3369 B 5 3347 E 1 3331 E 3 2361 B 1 2343 D 1 2326 E 4
9365 A 3 T265 B 10 9302 A 11 9278 E 9 9262 A 8 7284 A 11 6302 B 7 6284 B 10 6251 E 10 3303 E 13 3281 C 12 3261 C 11 2301 B 8 2270 B 9 9347 C 2 9327 D 3 7323 C 1 5322 E 5 3370 E 5 3348 E 1 3332 E 3 2362 B 1 2344 D 3 2327 E 3
9366 A 3 T305 A 11 9303 B 11 9279 E 10 9263 A 11 7285 A 11 6285 B 8 6252 B 13 3304 B 9 3282 C 7 2302 A 9 2271 A 12 2255 E 9 11 D 8 10 B 10 9348 B 5 9328 C 2 7324 C 1 5323 C 5 3371 E 3 3350 D 2 3333 D 2 2363 D 3 2345 D 2 2328 E 3

Supply part



This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

Left / Right Channel Amplifier

COMPONENT LAYOUT MAINS BOARD

Interconnection Board

primary side

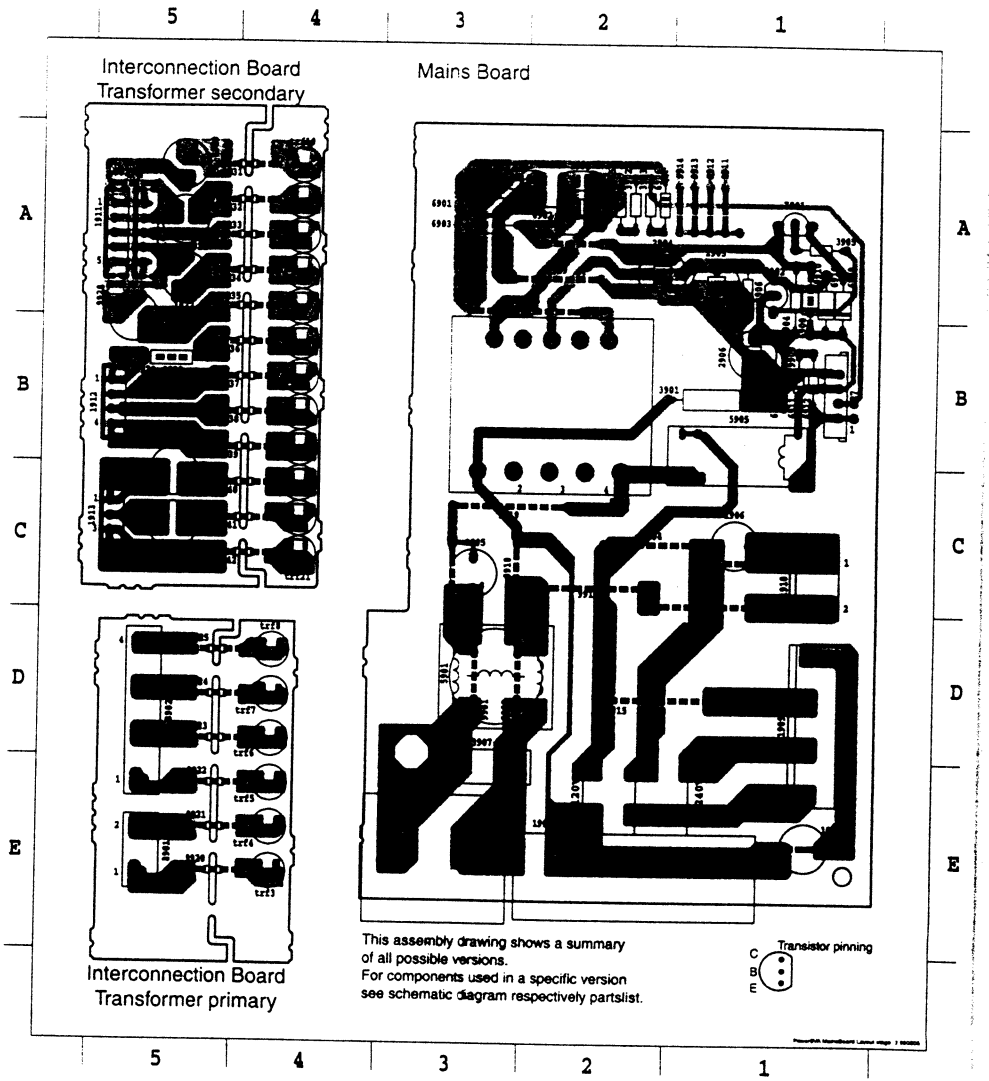
3901 E 5
3902 D 5
3920 E 4
3921 E 4
3922 E 4
3923 D 4
3924 D 4
3925 D 4
trf3 E 4
trf4 E 4
trf5 E 4
trf6 D 4
trf7 D 4
trf8 D 4

secondary side

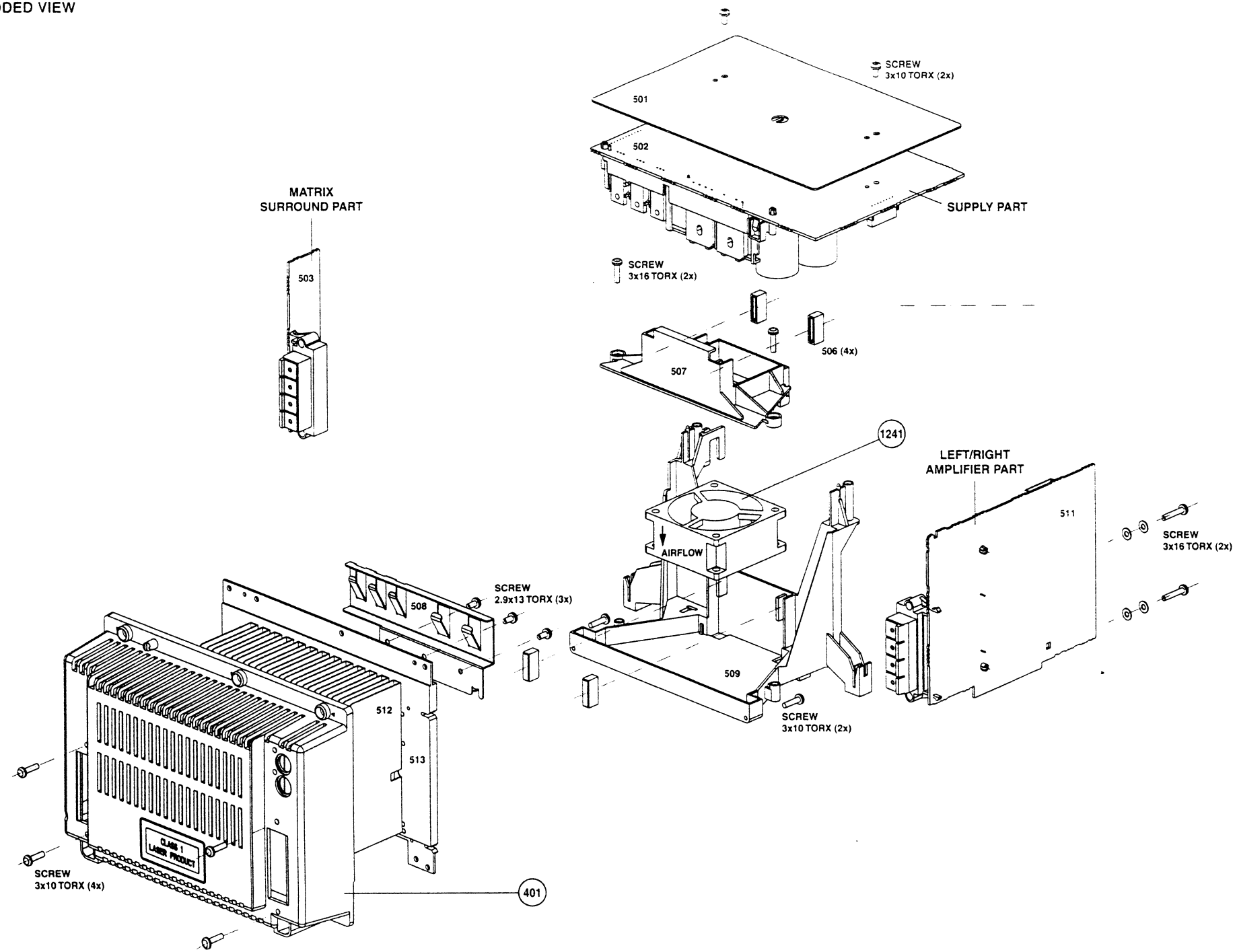
1911 A 5
1912 B 5
1913 C 5
1914 A 5
1920 A 4
1921 A 4
1922 A 4
1923 B 5
1924 C 4
1925 C 4
3920 B 4
9927 A 5
9928 A 5
9930 B 4
9931 A 4
9932 A 4
9933 A 4
9934 A 4
9935 B 4
9936 B 4
9937 B 4
9938 B 4
9939 C 4
9940 C 4
9941 C 4
9942 C 4
trf10 A 3
trf11 A 3
trf12 A 3
trf13 A 3
trf14 B 3
trf15 B 3
trf16 B 3
trf17 B 3
trf18 C 3
trf19 C 3
trf20 C 3
trf21 C 3

Mains Board

27 B 1
1901 E 3
1902 E 2
1905 C 3
1906 C 1
1907 E 1
1909 D 1
1910 C 1
2902 A 3
2903 A 2
2904 A 2
2905 A 1
2906 B 1
3901 B 1
3902 A 2
3903 A 2
3904 A 1
3905 A 1
3906 A 1
3907 E 3
5901 D 3
5902 D 3
5903 B 2
5905 B 1
6900 A 1
6901 A 3
5902 A 2
5903 A 3
5904 A 2
5905 A 2
5906 A 2
6908 B 1
6909 A 1
6910 A 1
6911 B 1
6912 B 1
7901 A 1
7902 A 1
9900 B 1
9901 D 3
9902 D 3
9903 C 3
9904 C 2
9905 C 1
9906 E 1
9907 A 3
9908 A 2
9909 A 2
9910 A 1
9911 A 1
9912 A 1
9913 A 1
9914 A 1
9915 D 2
9916 C 2
9917 C 1
9918 C 3
9919 C 3



EXPLODED VIEW



MECHANICAL PARTS LIST

401	4822 256 10558	Rucksack - L R	4822 256 10556	Holder ST×47/P5-VA
401	4822 256 10555	Rucksack - L R and Matrix	4822 466 93148	Spacer 5mm
1241	4822 361 11161	DC Brushless Fan		

ELECTRICAL PARTS LIST - MAINS BOARD

MISCELLANEOUS

1901	4822 265 31015	△	Mains Socket
1901#	4822 265 31016	△	Mains Socket
1902*	4822 272 10269	△	Voltage Selector
1905^	4822 071 55002	△	Fuse T5A 250V
1905#	4822 252 51123	△	Fuse T6,3A 250V
1906*	4822 071 55002	△	Fuse T5A 250V
1907*	4822 071 55002	△	Fuse T5A 250V
1909*	4822 267 10728	△	Primary Connector
1910	4822 265 20723	△	Primary Connector
1920	4822 071 55002	△	Fuse T5A 250V
1923	4822 071 55002	△	Fuse T5A 250V
1924	4822 071 52502	△	Fuse T2,5A 250V
1925	4822 071 51602	△	Fuse 1,6A 250V

CAPACITORS

2902	4822 121 43526	47nF 5% 250V
2903	4822 121 43526	47nF 5% 250V
2904*	4822 124 40255	100µF 20% 63V
2905*	4822 124 81029	100µF 20% 25V

RESISTORS

3901#	4822 053 21106	△	10M 5% 0,5W
3902	4822 050 11002		1k 1% 0,4W
3903	4822 050 11002		1k 1% 0,4W
3904*	4822 116 52283		4k7 5% 0,5W
3904^	4822 116 52244		15k 5% 0,5W
3905*	4822 116 52256		2k2 5% 0,5W
3906*	4822 116 83864		10k 5% 0,5W
3920*	4822 052 10108	△	1R 5% 0,33W

COILS & FILTERS

5901^	4822 157 11832	△	400µH 3A
5902*	4822 157 11628	△	Mains Choke
5903^	4822 146 11143	△	Standby Transformer
5903*	4822 146 11144	△	Standby Transformer
5903#	4822 146 11142	△	Standby Transformer
5905	4822 280 10382	△	Relay 1P 9V

DIODES

6900^	4822 130 31878	1N4003G
6901	4822 130 31878	1N4003G
6902	4822 130 31878	1N4003G
6903	4822 130 31878	1N4003G
6904	4822 130 31878	1N4003G
6905	4822 130 30621	1N4148
6906	4822 130 30621	1N4148
6908*	4822 130 34382	BZX79-B8V2
6909*	4822 130 32245	BYV10-40
6910*	4822 130 31878	1N4003G
6911	4822 130 30621	1N4148
6912	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7901*	4822 130 41246	BC327-25
7902*	4822 130 40959	BC547B

* For /21/21M only

^ Except for /21/21M

For /37 only

Note : Only the parts mentioned in this list are normal service spare parts.

11-9

ELECTRICAL PARTS LIST - SUPPLY & LEFT/RIGHT AMPLIFIER BOARD

MISCELLANEOUS

1321	4822 267 31176	L/R Loudspeaker Socket
1327	4822 265 10912	Matrix Surround Socket

CAPACITORS

2254	4822 121 43526	47nF 5% 250V
2255	4822 121 43526	47nF 5% 250V
2256	4822 121 43526	47nF 5% 250V
2257	4822 124 80415	4700µF 20% 50V
2258	4822 124 80415	4700µF 20% 50V
2263	5322 121 42386	100nF 5% 63V
2264	5322 121 42386	100nF 5% 63V
2265	4822 124 80563	4700µF 20% 35V
2267	4822 124 40255	100µF 20% 63V
2268	4822 124 40769	4,7µF 20% 100V
2269	4822 122 33197	1nF 10% 50V
2270	4822 124 41579	10µF 20% 50V
2271	4822 124 40433	47µF 20% 25V
2279	5322 121 42386	100nF 5% 63V
2280	4822 124 12328	6800µF 16V
2282	4822 124 41579	10µF 20% 50V
2289	4822 124 40242	1µF 20% 63V
2290	4822 124 81029	100µF 20% 25V
2300	4822 121 51387	10nF 20% 16V
2301	4822 124 41584	100µF 20% 10V
2303	4822 121 41857	10nF 5% 250V
2323	4822 124 41576	2,2µF 20% 50V
2324	4822 124 41576	2,2µF 20% 50V
2325	4822 122 33532	3,3nF 5% 50V
2326	4822 122 33532	3,3nF 5% 50V
2327	5322 122 32334	220pF 10% 100V
2328	5322 122 32334	220pF 10% 100V
2329	5322 122 32311	470pF 10% 100V
2330	5322 122 32311	470pF 10% 100V
2331	5322 122 32261	4,7nF 10% 100V
2333	4822 124 81151	22µF 50V
2334	4822 124 81151	22µF 50V
2337	4822 122 10465	4,7pF 10% 50V
2338	4822 122 10465	4,7pF 10% 50V
2343	4822 124 41576	2,2µF 20% 50V
2344	4822 124 40764	22µF 100 V
2345	4822 124 40764	22µF 100 V
2348	4822 124 81043	10µF 20% 100V
2349	4822 124 81043	10µF 20% 100V
2350	5322 121 42386	100nF 5% 63V
2351	5322 121 42386	100nF 5% 63V
2352	4822 124 40181	220µF 20% 10V
2353	5322 121 42386	100nF 5% 63V
2354	5322 121 42386	100nF 5% 63V
2355	5322 122 32261	4,7nF 10% 100V
2356	5322 122 32261	4,7nF 10% 100V
2365	4822 126 12785	47nF 50V

RESISTORS

3251	4822 116 52256		2k2 5% 0,5W
3252	4822 116 52256		2k2 5% 0,5W
3254	4822 116 52228		680R 5% 0,5W
3255	4822 116 83883		470R 5% 0,5W
3259	4822 116 83864		10k 5% 0,5W
3260	4822 117 11342		0R33 5% 2W
3261	4822 116 83876		270R 5% 0,5W
3262	4822 116 52206		120R 5% 0,5W
3265	4822 116 52234		100k 5% 0,5W
3266	4822 116 52228		680R 5% 0,5W
3267	4822 116 52276		3k9 5% 0,5W
3268	4822 116 83864		10k 5% 0,5W
3270	4822 117 11342		0R33 5% 2W
3271	4822 050 11002		1k 1% 0,4W
3272	4822 116 52263		2k7 5% 0,5W
3273	4822 116 52244		15k 5% 0,5W
3274	4822 116 52271		33k 5% 0,5W
3275	4822 116 52271		33k 5% 0,5W
3278	4822 116 52256		2k2 5% 0,5W
3280	4822 116 52239		120k 5% 0,5W
3281	4822 116 83864		10k 5% 0,5W
3282	4822 052 10479	△	47R 5% 0,33W
3285	4822 116 52269		3k3 5% 0,5W
3286	4822 116 52269		3k3 5% 0,5W
3287	4822 116 52257		22k 5% 0,5W
3288	4822 052 10479	△	47R 5% 0,33W
3289	4822 052 10479	△	47R 5% 0,33W
3290	4822 117 12063		NTC DC 5W 10k 5%
3295	4822 116 83872		220R 5% 0,5W
3298	4822 116 52219		330R 5% 0,5W
3299	4822 116 52219		330R 5% 0,5W
3300	4822 052 10568	△	5R60 5% 0,33W
3302	4822 116 83884		47k 5% 0,5W
3304	4822 116 83884		47k 5% 0,5W
3305	4822 116 52257		22k 5% 0,5W
3306	4822 116 83882		39k 5% 0,5W
3309	4822 116 52271		33k 5% 0,5W
3312	4822 116 83864		10k 5% 0,5W
3313	4822 050 11002		1k 1% 0,4W
3315	4822 116 52291		56k 5% 0,5W
3316	4822 116 83884		47k 5% 0,5W
3317	4822 052 10109	△	10R 5% 0,33W
3321	4822 116 83864		10k 5% 0,5W
3322	4822 116 83864		10k 5% 0,5W
3323	4822 116 52234		100k 5% 0,5W
3324	4822 116 83864		10k 5% 0,5W
3325	4822 116 52207		1k2 5% 0,5W
3326	4822 116 52207		1k2 5% 0,5W
3327	4822 116 52291		56k 5% 0,5W
3328	4822 116 52291		56k 5% 0,5W
3329	4822 116 52226		560R 5% 0,5W

ELECTRICAL PARTS LIST - SUPPLY & LEFT/RIGHT AMPLIFIER BOARD

RESISTORS

3329	4822 116 52228		680R 5% 0,5W
3330	4822 116 52228		680R 5% 0,5W
3331	4822 116 52291		56k 5% 0,5W
3332	4822 116 52291		56k 5% 0,5W
3333	4822 052 10479	⚠	47R 5% 0,33W
3334	4822 052 10479	⚠	47R 5% 0,33W
3335	4822 116 52243		1k5 5% 0,5W
3336	4822 116 52243		1k5 5% 0,5W
3337	4822 050 11002		1k 1% 0,4W
3338	4822 050 11002		1k 1% 0,4W
3339	4822 113 80633	⚠	0R1 5% 3W
3340	4822 113 80633	⚠	0R1 5% 3W
3345	4822 116 52234		100k 5% 0,5W
3346	4822 116 83864		10k 5% 0,5W
3347	4822 116 52271		33k 5% 0,5W
3348	4822 116 83872		220R 5% 0,5W
3350	4822 050 11002		1k 1% 0,4W
3351	4822 116 52234		100k 5% 0,5W
3352	4822 116 52234		100k 5% 0,5W
3353	4822 116 52257		22k 5% 0,5W
3358	4822 050 11002	⚠	1k 1% 0,4W
3363	4822 053 10478	⚠	4R70 5% 1W
3364	4822 053 10478	⚠	4R70 5% 1W
3365	4822 116 52234		100k 5% 0,5W
3365	4822 116 52304		82k 5% 0,5W
3366	4822 116 52234		100k 5% 0,5W
3366	4822 116 52304		82k 5% 0.5W
3367	4822 116 83884		47k 5% 0,5W
3368	4822 116 83884		47k 5% 0,5W
3369	4822 116 83884		47k 5% 0,5W
3370	4822 116 83884		47k 5% 0,5W
3383	4822 116 83884		47k 5% 0,5W
3384	4822 116 83884		47k 5% 0,5W
3386	4822 116 83961		6k8 5%
3387	4822 116 83864		10k 5% 0.5W
3388	4822 116 83864		10k 5% 0,5W

COILS & FILTERS

5321	4822 157 70599	IND FXD BEAD EMI
5322	4822 157 70599	IND FXD BEAD EMI

DIODES

6252	5322 130 80686		1N5392
6255	4822 130 11139	⚠	GBU8D
6260	5322 130 80686		1N5392
6261	5322 130 80686		1N5392
6262	5322 130 80686		1N5392
6263	5322 130 80686		1N5392
6264	4822 130 61219		BZX79-B10
6270	4822 130 30621		1N4148
6271	4822 130 30621		1N4148
6281	4822 130 31878		1N4003G
6284	4822 130 34173		BZX79-B5V6
6289	4822 130 34281		BZX79-B15
6290	4822 130 34281		BZX79-B15
6292	4822 130 30621		1N4148
6293	4822 130 34382		BZX79-B8V2
6294	5322 130 80686		1N5392
6295	4822 130 30621		1N4148
6298	4822 130 34278		BZX79-B6V8
6299	4822 130 30621		1N4148
6301	4822 130 30621		1N4148
6302	5322 130 31504		BZX79-B3V3
6337	4822 130 30621		1N4148
6339	4822 130 30621		1N4148
6360	4822 130 34281		BZX79-B15

TRANSISTORS & INTEGRATED CIRCUITS

7251	4822 130 10812	BDX53BFI
7252	4822 130 40959	BC547B
7253	4822 130 40959	BC547B
7255	4822 130 40959	BC547B
7260	4822 130 40959	BC547B
7263	4822 130 40959	BC547B
7265	4822 130 41691	BC556B
7266	4822 130 44568	BC557B
7268	4822 130 40959	BC547B
7280	4822 130 40959	BC547B
7281	4822 209 31841	L7805CP
7282	4822 130 41246	BC327-25
7286	4822 130 41246	BC327-25
7290	4822 130 41246	BC327-25
7323	4822 130 44461	BC546B
7324	4822 130 44461	BC546B
7325	4822 130 40959	BC547B
7326	4822 130 40959	BC547B
7327	4822 130 44461	BC546B
7329	4822 209 17383	STk47-090I
7329	4822 209 17385	STK496-070
7350	4822 130 41691	BC556B

Note : Only the parts mentioned in this list are normal service spare parts.

AF6 BOARD

TABLE OF CONTENTS

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AF6 Board - Circuit Diagram (Part 1) 12-3
AF6 Board - Circuit Diagram (Part 2) 12-4
Electrical parts list 12-5

BRIEF INTRODUCTION OF THE AF6 BOARD

The AF6 Board consists of the following features :

a. SOFAC IC

SOFAC IC TEA6321 (7511) which includes functions such as source selection, loudness control, dynamic bass control, treble control, front/rear volume control and muting function. Sound features such as DBB, DSC and IS are controllable via I²C Bus from the microprocessor.

The SOFAC IC caters for 4 input sources, namely tuner, tape, CD and AUX.
It also has a MONC input which is tied to ground via a capacitor. In our application, software will switch the input source to previous source MUTE during STANDBY mode and some other occasions where noise from other input source is undesirable.
Note that the input to the SOFAC IC must be ac coupled to prevent 'plop' noise.
Input networks are included to provide appropriate attenuation for various sources.

b. KARAOKE MIC. MIXING

The AF6 Board has provisions which can be configured to cater for one of the following:
NK : Non-Karaoke.
SK : Simple Karaoke which caters for single mic. mixing with additional mic. amplifier board.
FK : Full Karaoke which caters for double mic. mixing with additional mic. amplifier board.

c. DOLBY PRO LOGIC (DPL) INTERFACE

The AF6 Board has provisions which can be configured to cater for Dolby Pro Logic (DPL).

d. LINE OUT

Line out with cinch socket for connection to external amplifier.

e. SUB-WOOFER OUT

Sub-woofer out with cinch socket for connection to active sub-woofer speaker.

f. INCREDIBLE SURROUND

Incredible surround effect using transistor circuit (7531, 7532, 7533, 7534) to create phase shifting and spatial effect.

g. HEADPHONE AMPLIFIER

Headphone Amplifier to drive 32 ohm to 1kohm headphone.

h. CD STANDBY CONTROL

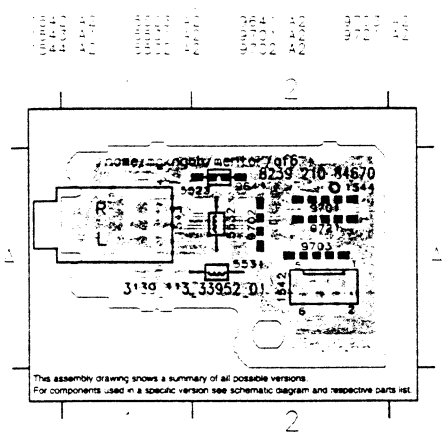
CD Standby Control circuit which switches on the supply to CD servo control IC, HF circuit and the laser light pen in CD mode only.

i. ATTENUATION NETWORK

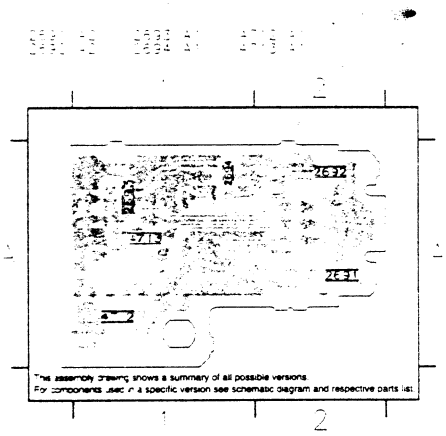
Attenuation network is provided at the output of the AF6 Board for interfacing with power board of different output power.

12-1

HEADPHONE BOARD - COMPONENT LAYOUT

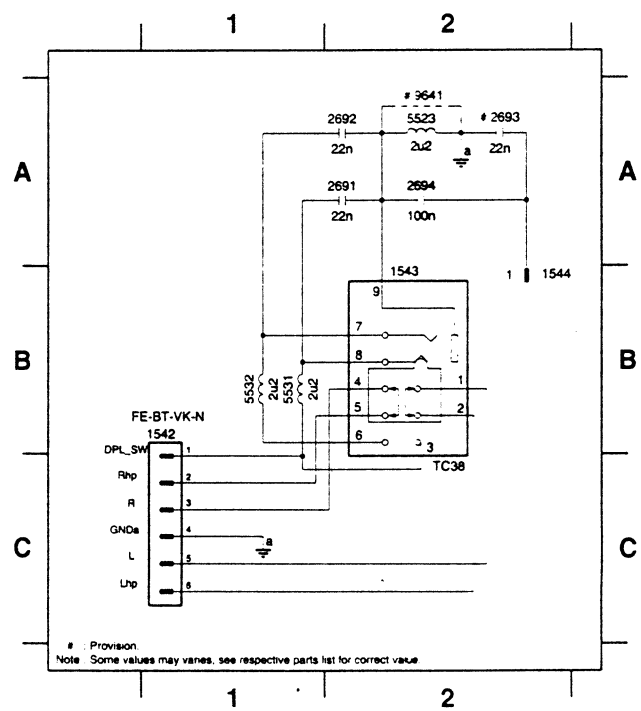

8239 210 44670
3139 123 33952.01
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram and respective parts list.

HEADPHONE BOARD - CHIP LAYOUT

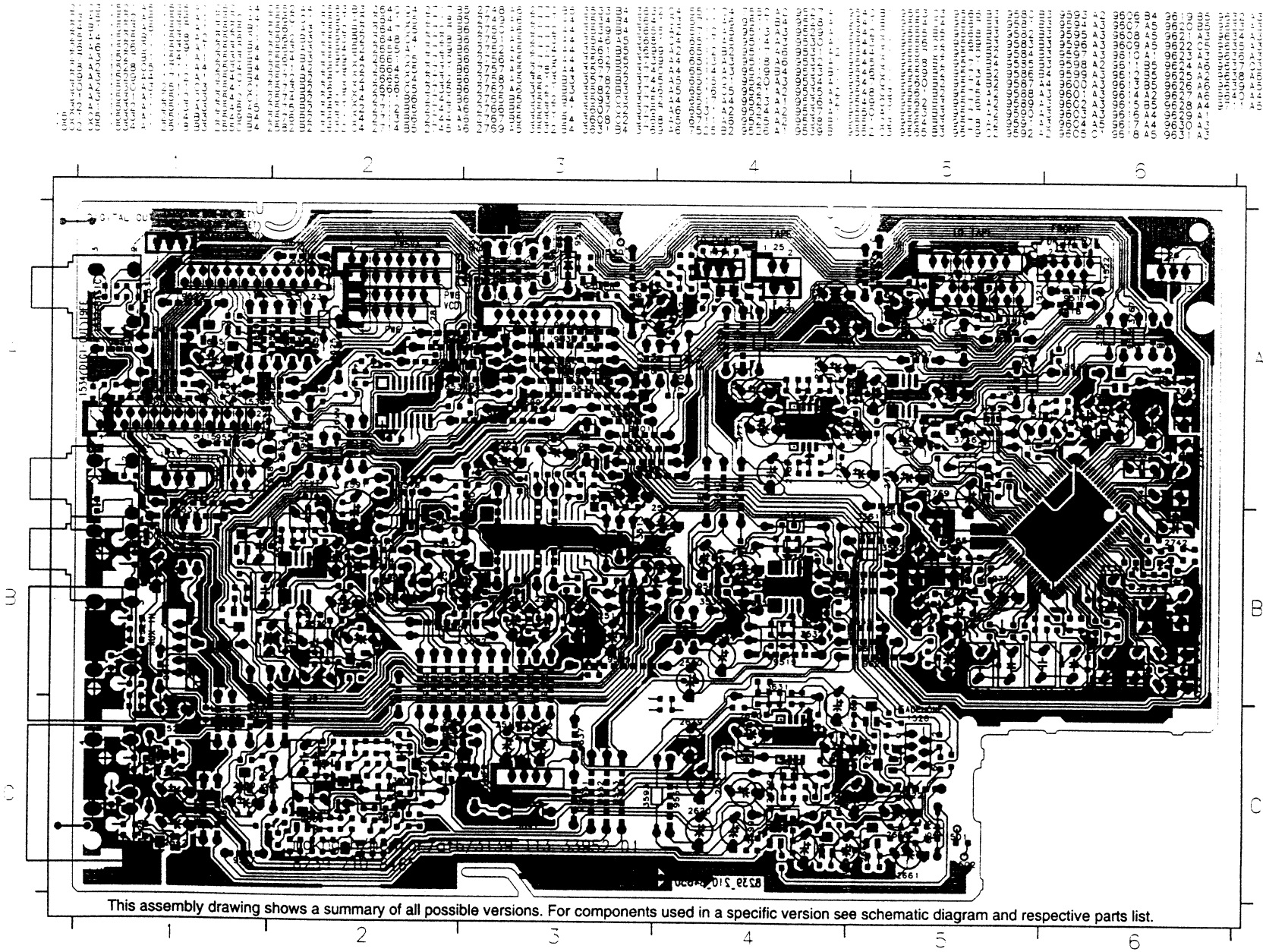

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram and respective parts list.

HEADPHONE BOARD - CIRCUIT DIAGRAM

1542 B1 1544 B2 2692 A2 2694 A2 5531 B1 9641 A2
1543 B2 2691 A2 2693 A2 5523 A2 5532 B1



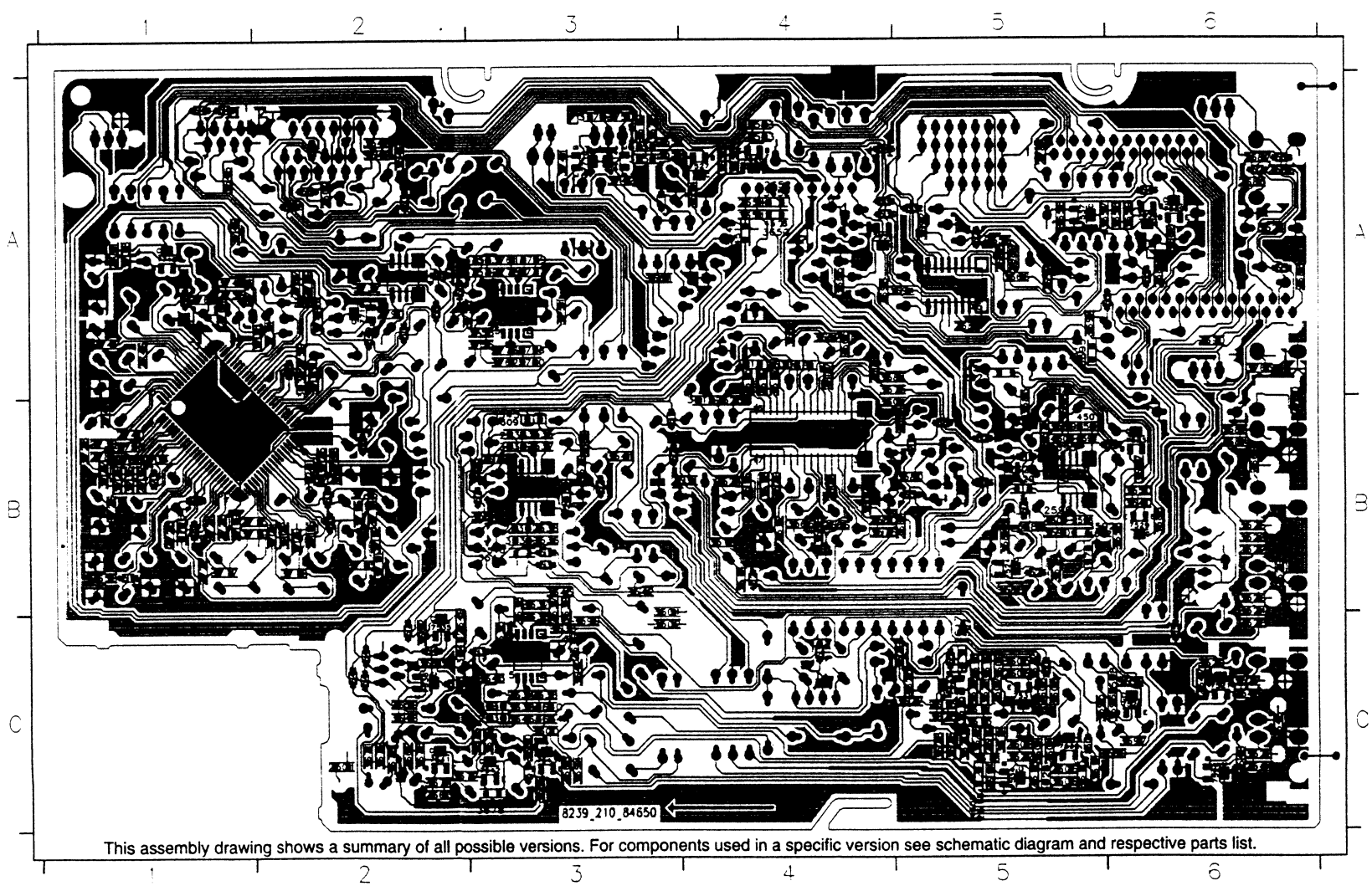
AF6 BOARD - COMPONENT LAYOUT



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

12-2

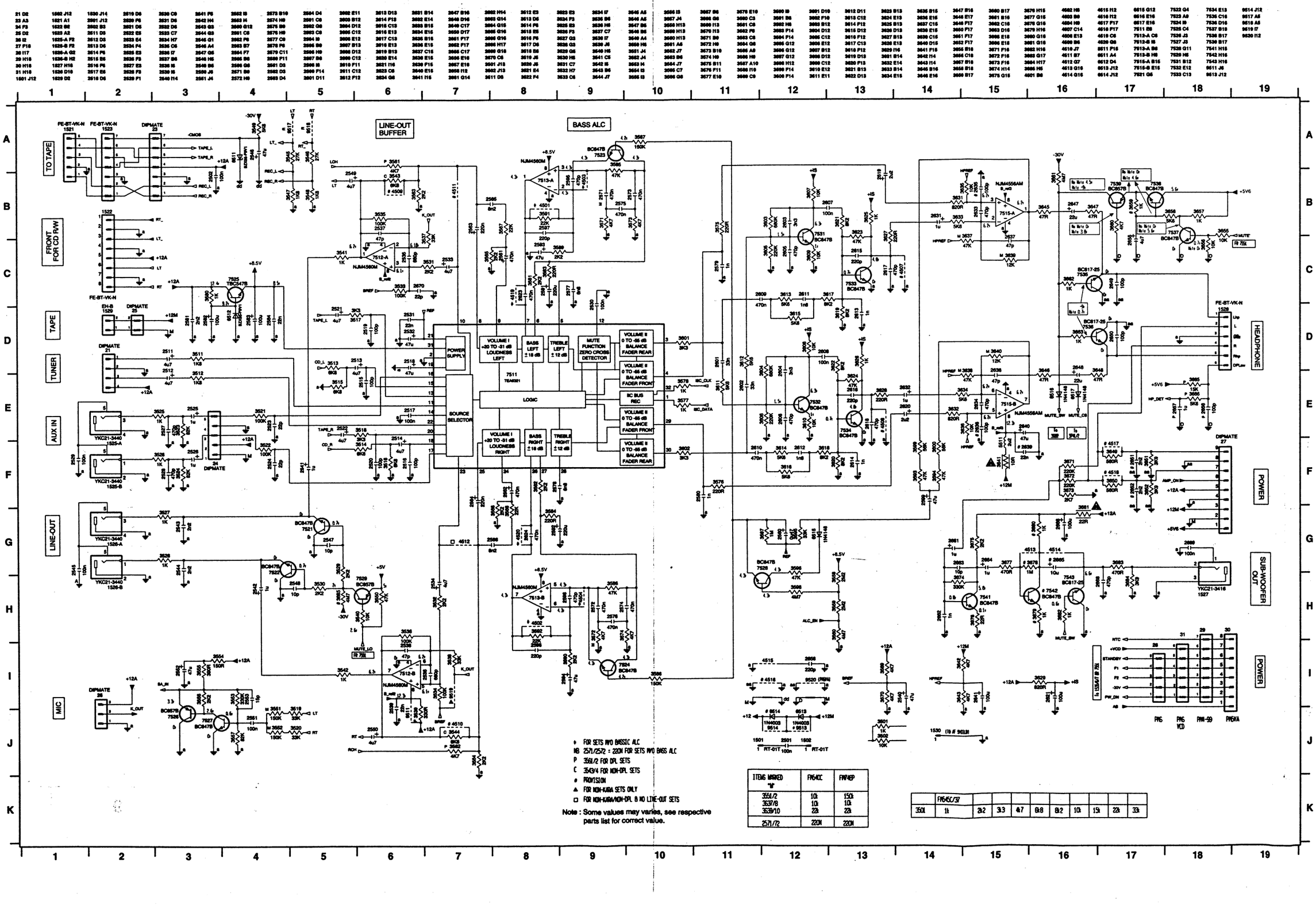
AF6 BOARD - CHIP LAYOUT



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

12-3

AF6 BOARD - CIRCUIT DIAGRAM (PART 1)

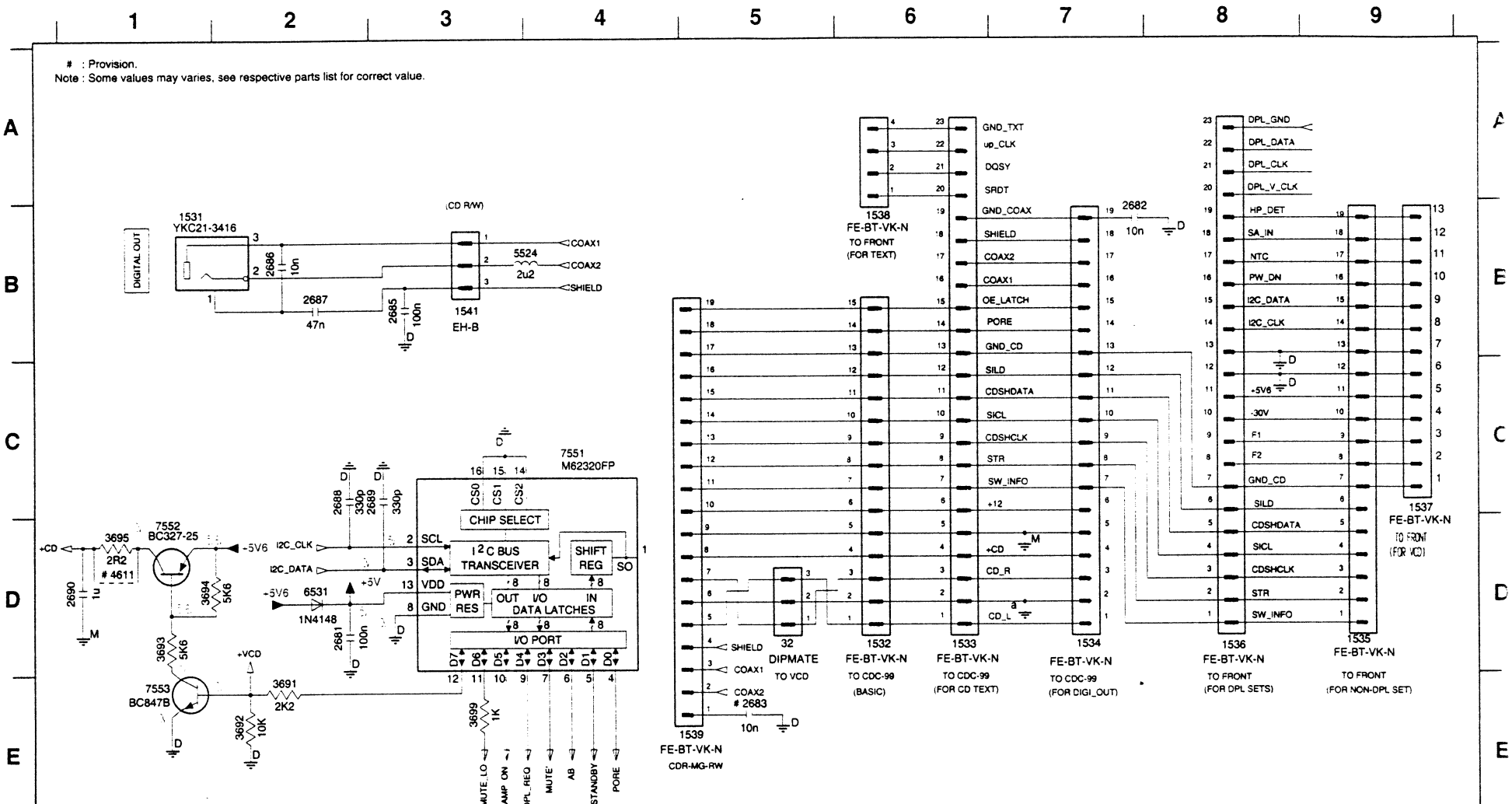


| | | |

12-4

AF6 BOARD - CIRCUIT DIAGRAM (PART 2)

32 D5	1532 D6	1534 D7	1536 D8	1538 B6	1541 B3	2682 B7	2685 B3	2687 B2	2689 C3	3691 E2	3693 D1	3695 D1	4611 D1	6531 D2	7552 D1	
1531 B1	1533 D6	1535 D9	1537 C9	1539 E5	2681 D2	2683 E5	2686 B2	2688 C2	2690 D1	3692 E2	3694 D1	3699 E3	5524 B4	7551 C4	7553 E1	



ELECTRICAL PARTS LIST - AF6 BOARD

MISCELLANEOUS

1523	4822 267 10953	Flex Connector 7P
1525	4822 267 20452	Cinch Socket - Aux in
1526	4822 267 20452	Cinch Socket - Line-out
1527	4822 267 31729	Cinch Socket - Sub-Woofer out
1528	4822 267 10731	Flex Connector 6P
1531	4822 267 31729	Cinch Socket - Digital out
1534	4822 265 11553	Flex Connector 19P
1535	4822 265 11553	Flex Connector 19P
1542	4822 267 10731	Flex Connector 6P
1543	4822 265 11529	Headphone Socket

CAPACITORS

2501	4822 126 13196	100nF 10% 25V
2511	4822 124 40769	4,7µF 20% 100V
2512	4822 124 40769	4,7µF 20% 100V
2513	4822 124 40769	4,7µF 20% 100V
2514	4822 124 40769	4,7µF 20% 100V
2515	5322 122 32531	100pF 5% 50V
2516	5322 122 32531	100pF 5% 50V
2517	4822 126 13196	100nF 10% 25V
2518	4822 124 40433	47µF 20% 25V
2519	5322 122 32531	100pF 5% 50V
2520	5322 122 32531	100pF 5% 50V
2521	4822 124 40769	4,7µF 20% 100V
2522	4822 124 40769	4,7µF 20% 100V
2523	5322 122 32658	22pF 5% 50V
2524	5322 122 32658	22pF 5% 50V
2525	4822 124 40242	1µF 20% 63V
2526	4822 124 40242	1µF 20% 63V
2527	5322 122 34099	470pF 10% 63V
2528	5322 122 34099	470pF 10% 63V
2529	4822 126 10002	100nF 20% 25V
2530	4822 126 13196	100nF 10% 25V
2531	4822 122 33809	22nF 20% 50V
2532	4822 124 40433	47µF 20% 25V
2533	4822 124 40769	4,7µF 20% 100V
2534	4822 124 40769	4,7µF 20% 100V
2535	4822 122 32535	680pF 10% 63V
2536	4822 122 32535	680pF 10% 63V
2537	4822 126 13692	47pF 1% 63V
2538	4822 126 13692	47pF 1% 63V
2539	4822 122 33809	22nF 20% 50V
2540	4822 124 40433	47µF 20% 25V
2541	4822 124 40242	1µF 20% 63V
2542	4822 124 40242	1µF 20% 63V
2543	4822 122 33175	2,2nF 20% 50V
2544	4822 122 33175	2,2nF 20% 50V
2545	4822 126 10002	100nF 20% 25V
2546	4822 124 41751	47µF 20% 50V
2547	5322 122 32448	10pF 5% 63V
2548	5322 122 32448	10pF 5% 63V
2549	4822 124 40769	4,7µF 20% 100V
2550	4822 124 40769	4,7µF 20% 100V
2551	4822 126 13196	100nF 10% 25V
2552	4822 124 41751	47µF 20% 50V
2553	4822 126 13486	15pF 2% 63V
2560	4822 124 41407	0,47µF 20% 63V
2561	4822 124 41407	0,47µF 20% 63V
2562	4822 124 41407	0,47µF 20% 63V
2563	4822 121 51252	470nF 5% 63V
2564	4822 121 51252	470nF 5% 63V
2565	4822 126 10525	8,2nF 10% 63V
2566	4822 126 10525	8,2nF 10% 63V
2571	4822 121 51252	470nF 5% 63V
2572	4822 121 51252	470nF 5% 63V
2573	4822 121 51252	470nF 5% 63V
2574	4822 121 51252	470nF 5% 63V
2575	4822 121 51252	470nF 5% 63V
2576	4822 121 51252	470nF 5% 63V
2577	5322 122 31866	6,8nF 10% 63V
2578	5322 122 31866	6,8nF 10% 63V
2579	5322 122 34123	1nF 10% 50V
2580	5322 122 34123	1nF 10% 50V
2581	4822 122 33175	2,2nF 20% 50V
2582	4822 124 81029	100µF 20% 25V
2583	4822 124 81029	100µF 20% 25V
2584	4822 122 33809	22nF 20% 50V
2591	4822 124 22263	220µF 20% 25V
2592	4822 124 22263	220µF 20% 25V
2593	4822 124 40433	47µF 20% 25V
2594	4822 124 40433	47µF 20% 25V
2595	5322 122 34099	470pF 10% 63V
2596	5322 122 34099	470pF 10% 63V
2597	4822 122 33575	220pF 5% 63V
2598	4822 122 33575	220pF 5% 63V
2599	4822 124 41751	47µF 20% 50V
2601	4822 126 12105	33nF 5% 50V
2602	4822 126 12105	33nF 5% 50V
2603	4822 122 33891	3,3nF 10% 63V
2604	4822 122 33891	3,3nF 10% 63V
2605	5322 122 34099	470pF 10% 63V
2606	5322 122 34099	470pF 10% 63V
2607	4822 126 13196	100nF 10% 25V
2608	4822 126 13196	100nF 10% 25V
2609	4822 121 51252	470nF 5% 63V
2610	4822 121 51252	470nF 5% 63V
2611	4822 126 10847	1,8nF 10% 63V
2612	4822 126 10847	1,8nF 10% 63V
2613	5322 122 34123	1nF 10% 50V
2614	5322 122 34123	1nF 10% 50V
2615	4822 122 33575	220pF 5% 63V
2616	4822 122 33575	220pF 5% 63V
2617	5322 122 34099	470pF 10% 63V
2618	5322 122 34099	470pF 10% 63V

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ELECTRICAL PARTS LIST - AF6 BOARD

2619	4822 124 41576	2,2µF 20% 50V
2620	4822 124 41576	2,2µF 20% 50V
2621	4822 124 81029	100µF 20% 25V
2623	4822 126 13482	470nF +80/-20% 16V
2624	4822 126 13482	470nF +80/-20% 16V
2631	4822 124 40242	1µF 20% 63V
2632	4822 124 40242	1µF 20% 63V
2633	5322 122 34099	470pF 10% 63V
2634	5322 122 34099	470pF 10% 63V
2637	4822 126 13692	47pF 1% 63V
2638	4822 126 13692	47pF 1% 63V
2639	4822 122 33809	22nF 20% 50V
2640	4822 124 40433	47µF 20% 25V
2641	4822 124 81029	100µF 20% 25V
2647	4822 124 81151	22µF 50V
2648	4822 124 81151	22µF 50V
2649	4822 126 10002	100nF 20% 25V
2650	5322 122 32531	100pF 5% 50V
2655	4822 124 40769	4,7µF 20% 100V
2658	4822 122 33575	220pF 5% 63V
2661	4822 124 40242	1µF 20% 63V
2662	5322 122 34123	1nF 10% 50V
2663	5322 122 32448	10pF 5% 63V
2664	4822 124 40242	1µF 20% 63V
2666	4822 124 81029	100µF 20% 25V
2668	5322 122 34099	470pF 10% 63V
2669	4822 126 10002	100nF 20% 25V
2681	4822 126 13196	100nF 10% 25V
2682	4822 122 33808	10nF 20% 50V
2685	4822 126 10002	100nF 20% 25V
2686	4822 122 33808	10nF 20% 50V
2687	4822 122 33797	47nF 20% 50V
2688	4822 122 33805	330pF 10% 63V
2689	4822 122 33805	330pF 10% 63V
2690	4822 126 13836	1µF 16V
2691	4822 122 33809	22nF 20% 50V
2692	4822 122 33809	22nF 20% 50V
2694	4822 126 10002	100nF 20% 25V

RESISTORS

3501	4822 051 10102	1k 2% 0,25W
3502	4822 117 10833	10k 1% 0,1W
3511	4822 051 20182	1k8 5% 0,1W
3512	4822 051 20182	1k8 5% 0,1W
3513	4822 116 83961	6k8 5%
3514	4822 117 11507	6k8 1% 0,1W
3515	4822 117 11507	6k8 1% 0,1W
3516	4822 117 11507	6k8 1% 0,1W
3517	4822 051 20332	3k3 5% 0,1W
3518	4822 051 20332	3k3 5% 0,1W
3519	4822 051 20333	33k 5% 0,1W
3520	4822 051 20333	33k 5% 0,1W
3521	4822 116 52234	100k 5% 0,5W
3522	4822 116 52234	100k 5% 0,5W
3523	4822 117 11149	82k 1% 0,1W
3524	4822 117 11149	82k 1% 0,1W
3525	4822 051 10102	1k 2% 0,25W
3526	4822 051 10102	1k 2% 0,25W
3527	4822 051 10102	1k 2% 0,25W
3528	4822 051 10102	1k 2% 0,25W
3529	4822 117 11449	2k2 1% 0,1W
3530	4822 116 52256	2k2 5% 0,5W
3531	4822 116 52256	2k2 5% 0,5W
3532	4822 116 52256	2k2 5% 0,5W
3533	4822 116 52234	100k 5% 0,5W
3534	4822 116 52234	100k 5% 0,5W
3535	4822 051 20104	100k 5% 0,1W
3536	4822 051 20104	100k 5% 0,1W
3537	4822 051 20333	33k 5% 0,1W
3538	4822 051 20333	33k 5% 0,1W
3540	4822 117 10833	10k 1% 0,1W
3541	4822 051 10102	1k 2% 0,25W
3542	4822 051 10102	1k 2% 0,25W
3543	4822 117 11507	6k8 1% 0,1W
3544	4822 117 11507	6k8 1% 0,1W
3545	4822 051 20273	27k 5% 0,1W
3546	4822 116 52264	27k 5% 0,5W
3547	4822 051 20182	1k8 5% 0,1W
3548	4822 051 20182	1k8 5% 0,1W
3549	4822 051 20562	5k6 5% 0,1W
3550	4822 117 10834	47k 1% 0,1W
3551	4822 051 20154	150k 5% 0,1W
3552	4822 051 20154	150k 5% 0,1W
3553	4822 051 20334	330k 5% 0,1W
3554	4822 117 10353	150R 1% 0,1W
3555	4822 051 20391	390R 5% 0,1W
3556	4822 117 11449	2k2 1% 0,1W
3557	4822 117 11149	82k 1% 0,1W
3558	4822 051 20225	2M2 5% 0,1W
3559	4822 051 20225	2M2 5% 0,1W
3560	4822 051 20475	4M7 5% 0,1W
3563	4822 117 11449	2k2 1% 0,1W
3564	4822 117 11449	2k2 1% 0,1W
3565	4822 117 11449	2k2 1% 0,1W
3566	4822 117 11449	2k2 1% 0,1W
3567	4822 051 20223	22k 5% 0,1W
3568	4822 051 20223	22k 5% 0,1W
3569	4822 051 20472	4k7 5% 0,1W
3570	4822 051 20472	4k7 5% 0,1W
3571	4822 051 20472	4k7 5% 0,1W
3572	4822 051 20472	4k7 5% 0,1W
3573	4822 051 20472	4k7 5% 0,1W
3574	4822 051 20472	4k7 5% 0,1W
3575	4822 117 11503	220R 1% 0,1W

RESISTORS

3576	4822 117 11503	220R 1% 0,1W	3629	4822 117 11454		820R 1% 0,1W
3577	4822 050 11002	1k 1% 0,4W	3631	4822 116 52231		820R 5% 0,5W
3578	4822 050 11002	1k 1% 0,4W	3632	4822 116 52231		820R 5% 0,5W
3580	4822 051 10102	1k 2% 0,25W	3633	4822 051 20562		5k6 5% 0,1W
3581	4822 117 11449	2k2 1% 0,1W	3634	4822 051 20562		5k6 5% 0,1W
3582	4822 116 52256	2k2 5% 0,5W	3635	4822 117 10833		10k 1% 0,1W
3583	4822 117 11503	220R 1% 0,1W	3636	4822 117 10833		10k 1% 0,1W
3584	4822 117 11503	220R 1% 0,1W	3637	4822 117 10834		47k 1% 0,1W
3585	4822 117 10834	47k 1% 0,1W	3638	4822 117 10834		47k 1% 0,1W
3586	4822 117 10834	47k 1% 0,1W	3639	4822 117 11383		12k 1% 0,1W
3587	4822 051 20154	150k 5% 0,1W	3640	4822 117 11383		12k 1% 0,1W
3588	4822 051 20154	150k 5% 0,1W	3641	4822 052 10109	Δ	10R 5% 0,33W
3589	4822 117 11449	2k2 1% 0,1W	3642	4822 051 20472		4k7 5% 0,1W
3590	4822 117 11449	2k2 1% 0,1W	3643	4822 051 20472		4k7 5% 0,1W
3591	4822 051 20223	22k 5% 0,1W	3645	4822 051 20479		47R 5% 0,1W
3592	4822 051 20223	22k 5% 0,1W	3646	4822 051 20479		47R 5% 0,1W
3593	4822 116 83884	47k 5% 0,5W	3647	4822 051 20479		47R 5% 0,1W
3594	4822 117 10834	47k 1% 0,1W	3648	4822 051 20479		47R 5% 0,1W
3595	4822 051 20333	33k 5% 0,1W	3649	4822 051 20331		330R 5% 0,1W
3596	4822 117 10834	47k 1% 0,1W	3650	4822 051 20331		330R 5% 0,1W
3597	4822 051 20105	1M 5% 0,1W	3651	4822 051 20392		3k9 5% 0,1W
3598	4822 051 20475	4M7 5% 0,1W	3652	4822 051 20392		3k9 5% 0,1W
3599	4822 117 11148	56k 1% 0,1W	3655	4822 116 83864		10k 5% 0,5W
3600	4822 117 11148	56k 1% 0,1W	3656	4822 117 10833		10k 1% 0,1W
3601	4822 051 20332	3k3 5% 0,1W	3657	4822 051 10102		1k 2% 0,25W
3602	4822 051 20332	3k3 5% 0,1W	3658	4822 051 20562		5k6 5% 0,1W
3603	4822 051 20684	680k 5% 0,1W	3660	4822 051 20472		4k7 5% 0,1W
3604	4822 051 20684	680k 5% 0,1W	3661	4822 051 20475		4M7 5% 0,1W
3605	4822 117 13579	220k 1% 0,1W	3662	4822 051 10102		1k 2% 0,25W
3606	4822 117 13579	220k 1% 0,1W	3663	4822 051 10102		1k 2% 0,25W
3607	4822 116 83864	10k 5% 0,5W	3671	4822 117 13579		220k 1% 0,1W
3608	4822 116 83864	10k 5% 0,5W	3672	4822 117 13579		220k 1% 0,1W
3609	4822 117 10833	10k 1% 0,1W	3673	4822 117 12955		2k7 1% 0,1W
3610	4822 117 10833	10k 1% 0,1W	3674	4822 051 20334		330k 5% 0,1W
3611	4822 051 20562	5k6 5% 0,1W	3675	4822 117 11449		2k2 1% 0,1W
3612	4822 051 20562	5k6 5% 0,1W	3676	4822 051 20229		22R 5% 0,1W
3613	4822 051 20562	5k6 5% 0,1W	3677	4822 051 20471		470R 5% 0,1W
3614	4822 051 20562	5k6 5% 0,1W	3681	4822 052 10229	Δ	22R 5% 0,33W
3615	4822 051 20562	5k6 5% 0,1W	3682	4822 051 10102		1k 2% 0,25W
3616	4822 051 20562	5k6 5% 0,1W	3683	4822 051 20471		470R 5% 0,1W
3617	4822 051 20822	8k2 5% 0,1W	3684	4822 051 20392		3k9 5% 0,1W
3618	4822 051 20822	8k2 5% 0,1W	3691	4822 117 11449		2k2 1% 0,1W
3619	4822 051 20822	8k2 5% 0,1W	3692	4822 117 10833		10k 1% 0,1W
3620	4822 051 20822	8k2 5% 0,1W	3693	4822 051 20562		5k6 5% 0,1W
3621	4822 051 20822	8k2 5% 0,1W	3694	4822 051 20562		5k6 5% 0,1W
3622	4822 051 20822	8k2 5% 0,1W	3695	4822 051 20228		2R2 5% 0,1W
3623	4822 117 10834	47k 1% 0,1W	3699	4822 050 11002		1k 1% 0,4W
3624	4822 117 10834	47k 1% 0,1W	3768	4822 050 11002		1k 1% 0,4W
3625	4822 051 10102	1k 2% 0,25W	4513	4822 051 20008		0R Jumper 0805
3626	4822 051 10102	1k 2% 0,25W	4514	4822 051 20008		0R Jumper 0805
3627	4822 117 11503	220R 1% 0,1W	4515	4822 051 20008		0R Jumper 0805
3628	4822 117 11503	220R 1% 0,1W	4516	4822 051 20008		0R Jumper 0805

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ELECTRICAL PARTS LIST - AF6 BOARD

4522	4822 051 20008	0R Jumper 0805
4523	4822 051 20008	0R Jumper 0805
4524	4822 051 20008	0R Jumper 0805
4525	4822 051 20008	0R Jumper 0805
4527	4822 051 20008	0R Jumper 0805
4528	4822 051 20008	0R Jumper 0805
4529	4822 051 20008	0R Jumper 0805
4530	4822 051 20008	0R Jumper 0805
4531	4822 051 20008	0R Jumper 0805
4532	4822 051 20008	0R Jumper 0805
4533	4822 051 20008	0R Jumper 0805
4534	4822 051 20008	0R Jumper 0805
4535	4822 051 20008	0R Jumper 0805
4536	4822 051 20008	0R Jumper 0805
4537	4822 051 20008	0R Jumper 0805
4538	4822 051 20008	0R Jumper 0805
4539	4822 051 20008	0R Jumper 0805
4540	4822 051 20008	0R Jumper 0805
4541	4822 051 20008	0R Jumper 0805
4542	4822 051 20008	0R Jumper 0805
4543	4822 051 20008	0R Jumper 0805
4544	4822 051 20008	0R Jumper 0805
4545	4822 051 20008	0R Jumper 0805
4546	4822 051 20008	0R Jumper 0805
4547	4822 051 20008	0R Jumper 0805
4548	4822 051 20008	0R Jumper 0805
4549	4822 051 20008	0R Jumper 0805
4551	4822 051 20008	0R Jumper 0805
4553	4822 051 20008	0R Jumper 0805
4554	4822 051 20008	0R Jumper 0805
4556	4822 051 20008	0R Jumper 0805
4557	4822 051 20008	0R Jumper 0805
4558	4822 051 20008	0R Jumper 0805
4559	4822 051 20008	0R Jumper 0805
4561	4822 051 20008	0R Jumper 0805
4562	4822 051 20008	0R Jumper 0805
4563	4822 051 20008	0R Jumper 0805
4565	4822 051 20008	0R Jumper 0805
4566	4822 051 20008	0R Jumper 0805
4567	4822 051 20008	0R Jumper 0805
4571	4822 051 20008	0R Jumper 0805
4573	4822 051 20008	0R Jumper 0805
4580	4822 051 20008	0R Jumper 0805
4712	4822 051 20008	0R Jumper 0805
4713	4822 051 20008	0R Jumper 0805
4714	4822 051 20008	0R Jumper 0805
4715	4822 051 20008	0R Jumper 0805
4716	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5511	4822 157 62552	Coil 2,2µH 5%
5523	4822 157 62552	Coil 2,2µH 5%
5524	4822 157 10586	Coil 2,2µH 10%
5531	4822 157 62552	Coil 2,2µH 5%
5532	4822 156 21721	Coil 2,2µH 10%

DIODES

6511	4822 130 30862	BZX79-B9V1
6512	4822 130 30862	BZX79-B9V1
6513	4822 130 31878	1N4003G
6515	4822 130 30621	1N4148
6516	4822 130 30621	1N4148
6531	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7511	4822 209 33652	TEA6321T/V1
7512	4822 209 83357	NJM4560M
7513	4822 209 83357	NJM4560M
7515	4822 209 31378	NJM4556MB
7521	4822 130 60511	BC847B
7522	4822 130 60511	BC847B
7523	4822 130 60511	BC847B
7524	4822 130 60511	BC847B
7525	4822 130 40959	BC547B
7526	5322 130 60508	BC857B
7527	4822 130 60511	BC847B
7528	4822 130 60511	BC847B
7529	5322 130 60508	BC857B
7531	4822 130 60511	BC847B
7532	4822 130 60511	BC847B
7533	4822 130 60511	BC847B
7534	4822 130 60511	BC847B
7535	4822 130 42804	BC817-25
7536	4822 130 42804	BC817-25
7537	4822 130 60511	BC847B
7538	4822 130 60511	BC847B
7539	5322 130 60508	BC857B
7541	4822 130 60511	BC847B
7543	4822 130 42804	BC817-25
7551	4822 209 17345	M62320FP
7552	4822 130 41246	BC327-25
7553	4822 130 60511	BC847B

Note : Only the parts mentioned in this list are normal service spare parts.

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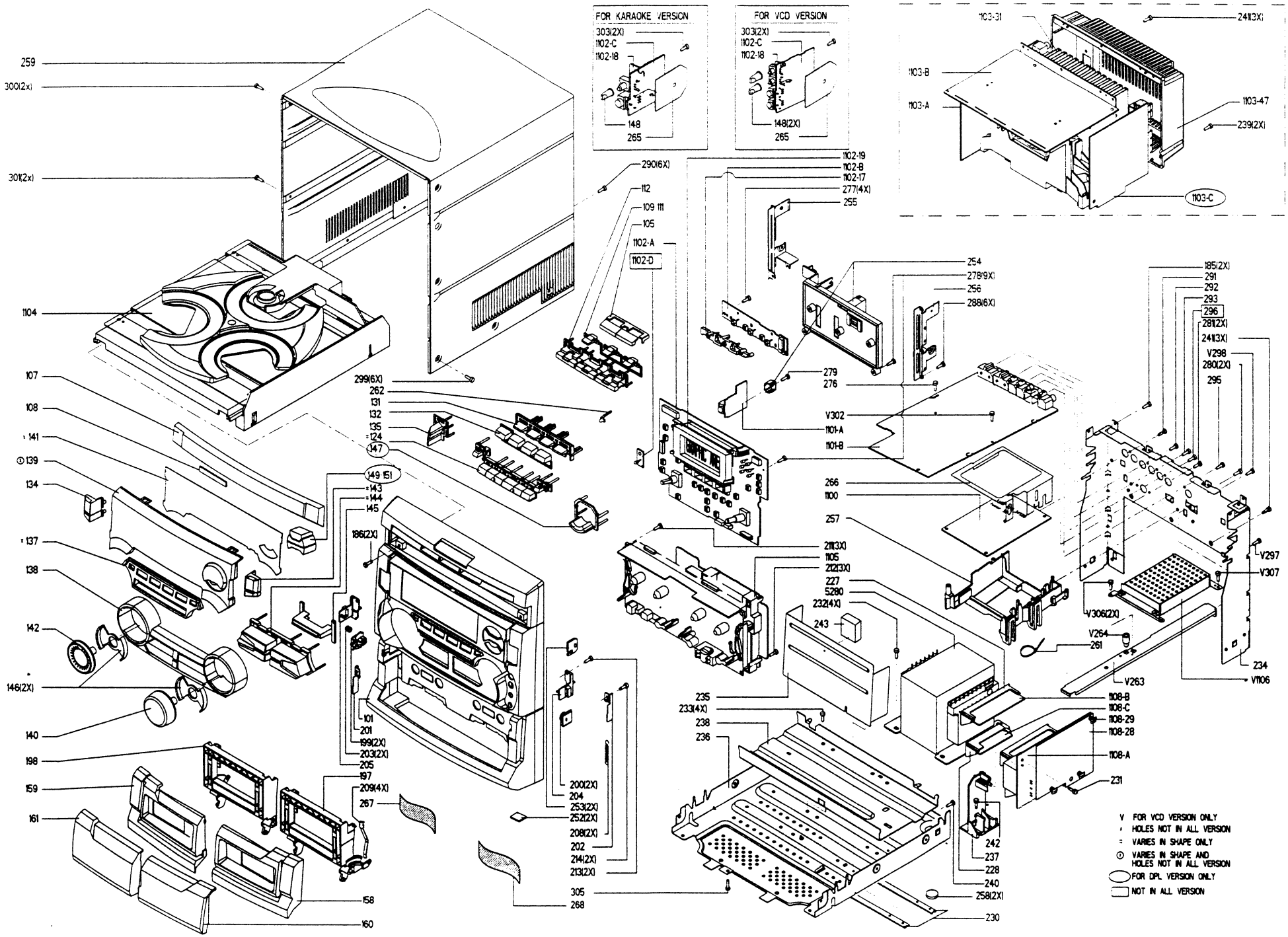
FOR KARAOKE VERSION
303(2X)
1102-C
1102-18
148
265
FOR VCD VERSION
303(2X)
1102-C
1102-18
148(2X)
265
1103-31
241(3X)
1103-B
1103-A
1103-47
239(2X)
1103-C
259
300(2X)
301(2X)
1104
107
108
141
139
134
137
138
142
146(2X)
140
198
159
161
158
160
299(6X)
262
131
132
135
124
147
149-151
143
144
145
186(2X)
101
201
199(2X)
203(2X)
205
197
209(4X)
267
200(2X)
204
253(2X)
252(2X)
208(2X)
202
214(2X)
213(2X)
305
268
290(6X)
112
109 111
105
1102-A
1102-D
1102-19
1102-B
1102-17
277(4X)
255
254
278(9X)
256
288(6X)
279
276
V302
1101-A
1101-B
266
1100
257
211(3X)
1105
212(3X)
227
5280
232(4X)
243
235
233(4X)
238
236
242
237
228
240
258(2X)
230
185(2X)
291
292
293
296
281(2X)
241(3X)
V298
280(2X)
295
V297
V307
V306(2X)
V264
261
234
V263
V1106
1108-B
1108-C
1108-29
1108-28
1108-A
231
V FOR VCD VERSION ONLY
HOLES NOT IN ALL VERSION
VARIES IN SHAPE ONLY
VARIES IN SHAPE AND HOLES NOT IN ALL VERSION
FOR DPL VERSION ONLY
NOT IN ALL VERSION

MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

101	4822 459 05254	Cabinet Front	
105	4822 410 12296	Button CDC Open/Close	
107	4822 442 01773	Cover CDC	
108	4822 454 13035	Badge Philips	
112	4822 410 12297	Button Set CDC Select	
124	3139 117 89230	Button Set Control	
131	4822 464 10514	Frame Lightguide Source Sel	
132	4822 410 12289	Button Set Source	
134	4822 410 12301	Button Standby/Timer	
135	4822 410 12302	Button Set Dubbing/Rec	
137	4822 442 01772	Cover Orn. Control	
138	4822 442 01768	Cover Orn.	
139	4822 450 10657	Window Display	
140	4822 410 12303	Knob Volume	
142	4822 273 10368	Jog Rotary	
143	4822 410 12309	Button Set RDS/NEWS/DB	
144	4822 410 12304	Button Set	
148	4822 410 12307	Knob Karaoke	
158	4822 443 11163	Cover Cassette Right	
159	4822 443 11165	Cover Cassette Left	
160	4822 381 12075	Lens Cassette Right	
161	4822 381 12074	Lens Cassette Left	
197	4822 443 10488	Door Cassette Right	
198	4822 443 10487	Door Cassette Left	
199	4822 402 10621	Push-Catch	
200	4822 529 10322	Damper Assembly	
203	4822 492 11344	Spring Compression	
204	4822 402 11246	Bracket Right	
205	4822 402 11245	Bracket Left	
208	4822 492 11345	Spring Tension	
209	4822 492 42787	Spring Cassette	
252	4822 462 40683	Foot Rubber (SQ)	
254	4822 466 12197	Plate Front	
258	4822 462 40683	Plate (Foot)	
259	4822 426 10807	Cabinet Rear	
350	4822 445 10838	LS Pair To Single	
351	4822 303 50063	FM Aerial	
356	4822 219 10683	Remote Control	
384	4822 303 50082	AM Frame Aerial	
385	4822 321 10249	⚠ Mains Cord	
387	4822 736 16736	Instruction For Use	
1571	4822 320 12702	Flex Cable BD 6P 140mm	
1573	4822 320 12654	Flex Cable AD 7P 220mm	
1653	4822 320 12703	Flex Cable BD 7P 140mm	
1680	4822 320 12656	Flex Cable AD 9P 280mm Folded	
1681	4822 320 12704	Flex Cable BD 19P 480mm	
5280	4822 146 11145	⚠ Mains Transformer	

LEFT/RIGHT LOUDSPEAKER BOX BREAKDOWN

4822 240 10384	Woofer 6,25" 6R 100W	
4822 458 10687	Cloth Frame Assembly	
4822 248 10006	Piezo Wire Assembly	
4822 240 10387	Tweeter 2,5" 6R 140W	

Note : Only the parts mentioned in this list are normal service spare parts.

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SCREW LISTS - MAIN UNIT

185	D3 x 10
186	D3 x 10
211	D3 x 12
212	D3 x 12
213	D3 x 12
214	D3 x 12
231	D3 x 10
232	M3 x 10
233	M3 x 6
239	M3 x 10
240	D3 x 12
241	M3 x 10
242	M3 x 10
276	D3 x 12
277	D3 x 12
278	D3 x 12
279	M3 x 12
280	D3 x 12
281	D3 x 12
288	D3 x 10
290	M3 x 10
291	D3 x 12
292	D3 x 12
293	D3 x 12
295	D3 x 12
298	M3 x 10
299	M3 x 10
300	M3 x 10
301	M3 x 10
302	M3 x 16
303	D3 x 12
305	M3 x 6